

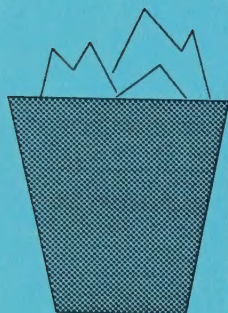
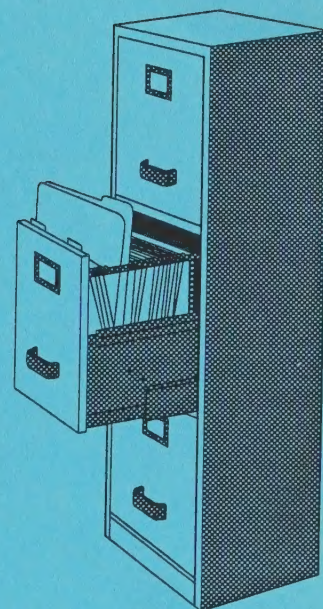
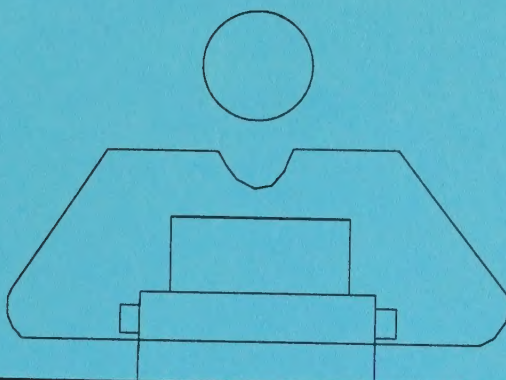
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## **SHORT SUBJECTS AND TIMELY TIPS FOR PESTICIDE USERS**

**1990**



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SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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3M INSECT/ARTHROPOD REPELLENT LOTION UPDATE

In the July 6 issue of "Short Subjects..." (No. 90-1) we reported on the "availability" of a new repellent designed for personnel who need effective, long-lasting protection against mosquitoes, ticks, flies, fleas, and chiggers.

Due to product demand, supplies were quickly exhausted. The 3M Company now advises that the product is available again. To order, use Fedstrip Form 1348-M, Form 344, or an agency procurement request.

Literature on this product is being forwarded to Forest Service Region, Station and Area pesticide coordinators. If you have any problems in ordering or need questions answered

CONTACT:                      ALLEN FENNER (DC)                      (703) 364-3468

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.





OLLIEU HEADS WEST

Max Ollieu, Assistant Director of Forest Pest Management in the Washington Office, Group Leader for Pesticide-Use Management and Coordination has been selected as Director, Forest Pest Management for the Pacific Northwest Region (R-6). Max came to the WO in July of 1986 and will leave at the end of November, 1990.

Staff accomplishments during Max's tenure include initiation of: (1) This newsletter, (2) several national steering committees for aerial application of pesticides, (3) national pesticide management training courses at Marana, AZ, (4) a national spray model advisory committee, (5) Washington Office-led pesticide activity reviews of the Regions and Area, and (6) revision of Forest Service Handbook 2109.14. Significant continuing accomplishments include: (1) Pesticide background statements; (2) human health risk assessments; (3) responses to appeals of regional vegetation management plans; (4) partial lifting of the Chief's deferrals on application of herbicides within the Ninth Circuit, and (5) improving the processing and funding of NAPIAP proposals.

For additional information

CONTACT: MAX OLLIEU

(202) 453-9600

BIOPESTICIDES FALL FIELD TRIP

October 29-31, several Washington Office persons participated in a biopesticides fall field trip designed to keep abreast of developments in pesticide toxicology testing, good laboratory practice compliance, and biopesticide product production. The group included Bob Lyon and Bob Bridges of Forest Insect and Disease Research (FIDR) and Max Ollieu, Dennis Hamel, and Zdenka Horakova of Forest Pest Management (FPM). Included on the field trip itinerary were Microbiological Associates, Inc. (Bethesda, MD), Espro, Inc. (Columbia, MD), National Gypsy Moth Management Group, Inc., (Landisburg, PA), and Wildlife International, Inc. (Easton, MD).

Microbiological Associates: Microbiological Associates, Inc. is a toxicology testing organization that provides services in biotechnology, general toxicology, animal health, and virology. Microbiological Associates recently provided toxicology testing service to the USDA-FS to provide needed data to the California Department of Food and Agriculture for their registration of the nucleopolyhedrosis virus of the Douglas-fir tussock moth in California. Dr. Ray David was the Study Director for these tests; however, he was unable to participate in the field trip visit. Instead, Dr. Nona Karten and Dr. Martin Wenk provided overviews of laboratory animal research and good laboratory practice compliance.

Espro, Inc.: As reported in previous issues of "Short Subjects...", Espro is a start-up biopesticide firm dedicated to the production and processing of environmentally safe pesticide products. Their current emphasis is on insect virus products (IVPs). As indicated in another short subject (p. 7) Espro recently signed a technology transfer agreement (TTA) with the FS. The purpose of the TTA is to authorize Espro to use FS data to obtain a "me too"





registration with EPA for Gypchek, the gypsy moth IVP currently registered by the agency. The FS and Espro are also negotiating a contract for the purchase of about 125,000 acre treatments of Gypchek over the next five years.

National Gypsy Moth Management Group: Headed by Dr. Mark Ticehurst, the National Gypsy Moth Management Group is dedicated to research and consultation, integrated pest management, and parasite production, distribution, and use as gypsy moth management alternative. Currently Mark and his staff are rearing the following gypsy moth parasites for inundative releases:

Glyptapanteles flavicoxis  
Meteorus pulchricornis  
Cotesia melanoscelus

The National Gypsy Moth Management Group also has an interest in eventually producing gypsy moth viral products such as Gypchek.

Wildlife International, Inc.: The last stop on the biopesticide field trip was Wildlife International, Inc. in Easton, MD. The field trip group viewed ongoing FS-contracted toxicology testing of methylcyclohexenone (MCH) on mallards and bobwhite quail, fish (rainbow trout and bluegill) and Daphnia at Wildlife Intl.

The group was very impressed with Wildlife International's operation, one of a very few in the U.S. capable of doing wild animal research studies in the laboratory.

Questions on the biopesticides fall field trip may be addressed to WO/FPM/PUM&C

CONTACT: DENNIS R. HAMEL (DC) (202) 453-9600

#### 1989 FOREST PEST CONDITIONS REPORT RELEASED

"Forest Insect and Disease Conditions in the United States--1989," the annual report produced by Forest Pest Management, has been published and is available upon request. Information is formatted to reflect trends in insect and disease conditions in the USDA Forest Service Regions and Area. The report was recently released to Members of Congress, and organizations, associations, libraries, and members of national and international public interest groups. For a copy of the Conditions Report

CONTACT: ALISON WORRALL (202) 453-9600

#### NEW PUBLICATION FROM THOMSON

A new publication entitled "The Safe and Effective Use of Pesticides" was recently added to the well-known line of agricultural chemical books published by Thomson Publications. This book was produced under the auspices of the U. of California statewide integrated pest management project through a Memorandum of Understanding between the U. of California and the California Department of Food and Agriculture. The book is designed to help the reader learn safe and effective ways of using pesticides and to show how to reduce accidents and avoid injury and environmental problems. The book is soft-bound and sells for \$40.00. For additional information

CONTACT: THOMSON PUBLICATIONS (CA) (209) 435-2163





## ANIMAL DAMAGE CONTROL

On October 23-24, Oregon State University (OSU) hosted a workshop entitled "Silvicultural Approaches to Animal Damage Management in Pacific Northwest Forests."

In the USDA Forest Service (FS), when animal damage control is mentioned it is usually perceived to refer to predator and pocket gopher control and other activities carried out by the Animal and Plant Health Inspection Service (APHIS). However, as this workshop illustrated, animal damage control (ADC) is much broader and involves such disparate activities as management of:

- Deer and elk;
- Mountain beaver;
- Woodrats and tree squirrels;
- Porcupines;
- Bear;
- Birds;
- Rabbits and hares, and
- Other others.

But, it isn't just "control" of these "some time pests." Animal damage has in recent years expanded to where it is now integrated animal damage management. This was elucidated well by Dr. Hugh C. Black, National FS ADC coordinator who provided an introduction, overview, and history of ADC by the agency.

The integrated forest protection aspects of ADC were discussed by OSU researchers Jack Walstad and Logan Norris. The integrated approach they presented involves: 1) Defining resource management objectives; 2) characterizing potential pest problems; 3) developing potential solutions; 4) evaluating and selecting alternatives; 5) implementing the alternative selected; and 6) evaluating and documenting the effectiveness of the program. These steps, when integrated and coordinated with the silvicultural system as a whole, will foster the development of maintenance of healthy, productive forest ecosystems that require a minimal amount of intervention for purposes of pest control.

Another researcher introduced a relatively new concept in ADC. Richard Pederson focused on "Area Management" or "Stand Management at the Landscape Level." In his presentation he encouraged silviculturists to practice their profession on finite, identifiable parts of the forest landscape, not on the forest or company lands as a whole. Stand level management is the most common forest division used for silvicultural treatment. Vertebrate pest control or animal damage management, the more popularized version may or may not lend itself to the geographical propensity of a stand. The forest manager or silviculturist must consider some portion of the forest landscape as a management area in the treatment of vertebrate pests. In almost all instances, this concept of "area management" encompasses an area greater than a stand, or at least the target stand plus some contiguous land.

In summary, several panels were used at the workshop to aid in discussion of all aspects of silvicultural approaches to animal damage management.

For additional information on ADC, ADM, or integrated forest protection

CONTACT:                    HUGH C. BLACK (R-6/OR)                    (503) 326-6927





### BIOPESTICIDE PRODUCT COORDINATORS NAMED BY FOREST SERVICE

In order to improve further research and development aspects of forestry-use biopesticidal products, the Forest Service recently nominated two coordinators to provide liaison with the Washington Office/Forest Pest Management/Pesticide-Use Management and Coordination Group (FPM/WO-PUM&C).

The Product coordinators will serve as a focal point for developmental activities. They will be responsible for activities leading to effective operational use. Among the duties of the product coordinators will be preparation of plans with critical event time schedules. This will include plans for laboratory, wind tunnel, and field evaluation needs of product tank mixes, particularly regarding physical properties, atomization, and handling. Field testing for efficacy and pilot testing for semi-operational use are matters that will also need further discussion and resolution.

Dick Reardon (FPM-Morgantown Field Office) and Jim Hadfield (FPM/RO-Portland, Oregon) have been nominated to serve as product coordinators for Gypchek and TM-Biocontrol-1 respectively.

For further information

CONTACT:                    MAX OLLIEU (DC)                    (202) 453-9600

### LYME DISEASE TRANSMITTED TO JOGGER BY A FLY

To date, the bite of a tick (Ixodes damini), which feeds primarily on deer blood, has been held solely responsible for conveying the spirochaete for Lyme disease to humans. Now, according to correspondence in the New England Journal of Medicine (322:1752, 1990), the disease has occurred in a man 13 days after he was bitten repeatedly on the chest by a deer or horse fly while jogging. There was no history of tick bites, but skin lesions typical of Lyme disease appeared at the site of each fly bite. He then developed fever, chills, and pain in his muscles and joints. In addition to these classical symptoms, the Lyme disease spirochaete was found in his blood. This appears to be a clear-cut case of Lyme disease being transmitted by a dipteran (insect) rather than a tick (arachnid).

Joggers and forest workers should heed the potentiality of being bitten by pests that could vector Lyme disease. A repellent (see SSTT item on p. 1) should be applied when biting insects or ticks are known to be in an area.

For additional information about Lyme disease or the repellent

CONTACT:                    WO-FOREST PEST MANAGEMENT                    (202) 453-9600





ANOTHER ADVISORY MEMORANDUM

Forest Service Pesticide Advisory Memorandum (PAM No. 452) was issued October 19. It encloses the "Installation Restoration Program Toxicology Guide" prepared by the Oak Ridge National Laboratory for the U.S. Air Force Systems Command. This guide was prepared to provide individuals responsible for the management and implementation of the U.S. Air Force Installation Restoration Program with information to evaluate the health hazards associated with actual or potential contamination of drinking water supplies.

For each chemical in the Toxicology Guide, the environmental fate, exposure pathways, toxicity, sampling and analysis methods, and Federal and State regulatory status are outlined.

PAM No. 452 encloses the Table of Contents of the four-volume set. The PAM also indicates the chemicals included, and a sample record--lindane. If you have a need for other chemical records

CONTACT:                      LARRY GROSS (DC)                      (202) 453-9600

U.S. POLL ON PESTICIDES SHOWS SUPPORT FOR ALTERNATIVES

According to a Novo Nordisk/Entotech report entitled "American Attitudes toward Pesticides," Americans are concerned about the use of pesticides and overwhelmingly support increased spending on the development of alternatives. The report, commissioned by Novo Nordisk, examines consumer opinions regarding the issue of protecting crops from harmful insects in a way that is effective yet safe to consumers and the environment. When asked to describe their level of concern about the use of pesticides in general, 50 percent of 1,200 adults from across America responded that they "are very concerned." An additional 39 percent said they are "somewhat concerned."

"This high level of concern may be attributed to the fact that Americans are becoming increasingly aware of the food they ingest," says Pamela G. Marrone, president of Entotech Inc., Novo Nordisk's new U.S. biopesticide research and development subsidiary. "We believe this concern makes the public highly receptive to innovative, environmentally friendly techniques," she said.

The American public appears to recognize biopesticides as a viable alternative to traditional chemicals. A large majority (76 percent) supports the notion that companies should dedicate more money and effort to the development of biopesticides. Forty-four percent indicated they would be willing to pay more for produce protected by biopesticides.

The Novo Nordisk/Entotech report also shows a significant level of public awareness (62 percent) regarding the existence and availability of two different types of pesticides: conventional chemicals and biopesticides. When asked about their most preferred method of protecting crops from insects, 49 percent chose non-chemical methods (21 percent biopesticides alone and 28 percent genetically engineered plants). An additional 31 percent selected "a combination of chemical pesticides and biopesticides." Ten percent preferred using "no protection at all." "Traditional chemical products alone" were chosen by only 3 percent.

The Novo Nordisk/Entotech poll was conducted by Research & Forecasts, Inc., a New York-based public opinion and marketing research firm. For additional info

CONTACT:                      NOVO/NORDISK                      (203) 790-2600





## FOREST SERVICE AND ESPRO SIGN NEW TECHNOLOGY TRANSFER AGREEMENT

The USDA Forest Service (FS) and Espro, Inc. recently signed a new technology transfer agreement (TTA) that will allow Espro to use FS data to obtain a separate registration of the gypsy moth nucleopolyhedrosis virus that the agency has registered as Gypchek with the U.S. Environmental Protection Agency. The new agreement was signed by S&PF Deputy Chief Allan J. West and the two principals of Espro, Todd Taylor (President) and Aldis Adamson (Vice President).

To further announce the signing of the TTA a Notice of Intent will be filed in the **Federal Register** in the near future. This will also provide the opportunity for other interested parties to submit alternate proposals for gypsy moth virus production.

For additional information or comment on this approach

CONTACT:                      DENNIS R. HAMEL (DC)                      (202) 453-9600

## SITUATION UPDATE--FOREST PESTS IN THE PACIFIC NORTHWEST

Two defoliators are once again presenting challenges to forest management in the National Forests of the Pacific Forest (R-6):

Western Spruce Budworm: The Walla Walla Ranger District on the Umatilla National Forest is doing an environmental analysis of approximately 80,000 acres of budworm-infested forests. Two alternatives being analyzed are: 1) Do nothing, and 2) suppress the outbreak with the biological insecticide that contains the active ingredient Bacillus thuringiensis. The EA is expected by the end of December. The area being analyzed is located northwest of LaGrande, Oregon between Meacham and Elgin.

Douglas-fir Tussock Moth: There is an outbreak of the Douglas-fir tussock moth (DFTM) on the Wallowa-Whitman National Forest. A survey to map the extent of the outbreak and measure population density is nearly completed. Preliminary results coming from the survey reveal the following: Thirty townships have been surveyed and five-hundred fifty nine 20-tree plots have been sampled. Three branches were examined from each tree for DFTM egg masses and/or pupae.

DFTM was found at some level in 23 of the surveyed townships (299 plots). Of these, 154 had a least five DFTM egg masses or pupae. Sixty plots averaged at least one DFTM egg mass or pupae per tree. Eight plots had at least 100 DFTM. The largest number of DFTM found on any plot was 268. Twelve townships had at least 12 DFTM each. Most of the outbreak is located on the Pine Ranger District and Hell's Canyon National Recreation Area. An environmental analysis of the DFTM on the Forest could result in a decision to conduct a suppression project in 1991 (possibly with the NPV TM Biocontrol-1). The analysis areas have not yet been delineated and the alternatives to be analyzed have not been fully developed. The EA is expected to be completed by the end of December.

CONTACT:                      JIM HADFIELD (OR)                      (503) 326-2727





## FAO AFFAIRS

Possible Foreign Assignments in Forest Pest Management: Bill Ciesla, Forest Protection Officer with the Food and Agriculture Organization (FAO) in Rome, Italy, recently visited the Washington Office. As most of you are aware, Bill has a long and distinguished career with the Forest Service serving in a variety of capacities in Forest Pest Management. His position with FAO is a new one with worldwide responsibilities for forest insects, diseases, fire, air pollution, and global climate change.

During his visit, Bill pointed out that his file of individuals from the U.S. interested in international opportunities in forest pest management listed only three people. To encourage greater interest, he left FAO application forms for those who would like to use them.

CONTACT:	WILLIAM M. CIESLA FOREST RESOURCE DEVELOPMENT VIA DELLE TERME DE CARACALLA	FOREST PROTECTION OFFICER FAO OF THE UNITED NATIONS 00100, ROME, ITALY
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North American Forestry Commission: On October 23-25, the Insect and Disease Study Group of the North American Forestry Commission (NAFC) of FAO met in Chihuahua, Mexico. The American delegation consisted of Jim Space, Richard Smith, Gary Daterman, and Jesus Cota. The function of the study group is to coordinate research and technical activities in the management of forest insect and disease pests and to serve as a forum for exchange of information and technology. The theme of this year's meeting was the operational use of pheromones in the US, Mexico, and Canada. Gary Daterman presented the U.S. point of view.

A number of technical exchanges, cooperative research projects, and training opportunities were identified at this NAFC meeting. These activities will be primarily in the areas of pesticide (e.g., Bt) application, pheromone testing, bark beetle management, and dwarf mistletoes.

For further information

CONTACT:	JESUS COTA (DC)	(202) 453-9600
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### WHAT HAPPENS WHEN PESTICIDES CONTACT THE SOIL?

In an article prepared jointly by the the Alaska Cooperative Extension Service, the University of Alaska, and the U.S. Department of Agriculture, a summary of "What Happens When Pesticides Contact the Soil?" has been prepared.

A pesticide or chemical has no effect on the environment until it is taken from the container and applied to the target area. Conversely, the environment cannot impact the fate of the material until contact is made. It might appear that one of three things happens when a pesticide is applied. It stays at the site, it is carried off by surface runoff, or it percolates downward until it reaches groundwater. Each of these is a possibility but not normally the ultimate or final fate.





Because chemicals are active or reactive they may be adsorbed onto the surface of plants or onto solid particles. Clay and organic soils have relatively high adsorptive properties. Chemicals that are thus held are not as susceptible to runoff or leaching. Adsorption is an important characteristic because it determines what other factors may act on the chemical as well as when and where.

The volatilization of a chemical transforms a solid or liquid into a vapor. When this occurs it is transported readily by the air. The vapor pressure of the chemical as well as the existing temperature, air movement, and humidity determine volatilization. Unwanted volatilization can be controlled by choosing the right formulation and considering the effect of ambient weather.

Pesticides can also be transformed by sunlight (photodecomposition). Those applied to the surface of plants and soil are most susceptible. The chemical changes brought about by photodecomposition make the pesticide more vulnerable to further degradation by chemical and biological processes.

Runoff is an important factor in transporting pesticides from the application site to non-target areas. Sloping, bare areas are the most vulnerable but it can also occur on flat areas due to sudden heavy rains or when rain falls on saturated soil. Some pesticides are more susceptible to runoff than others but beyond that, attention to weather, soil and slope can help reduce this problem. It is also important to read label directions to determine what other actions or precautions are necessary to reduce runoff.

When pesticides come into contact with water, changes occur. Chemical conversions often occur in a water environment. The presence of dissolved soil minerals and organic particles also help determine what changes occur. The rate of hydrolysis will also differ under differing field situations.

Pesticides are absorbed into plant tissue and also into soil organisms. After absorption, the pesticide is usually degraded. In the case of herbicides the dead plant tissue that results from the pesticide becomes an energy source for soil microbes.

The living component of soil plays an important role in degrading pesticides. These microbes attack chemicals and use them for food. Warm, moist, and aerated soil will usually promote the most rapid breakdown by soil organisms. Soil management practices that maintain and enhance populations of organisms speed up the degradation of pesticides and pesticide residues.

Another fate that may await pesticides applied to a site is removal. This can occur when plant material that has absorbed or adsorbed pesticides is removed. Movement of topsoil has also been responsible for moving active ingredients from one location to another.

Most pesticides are subject to a number of these changes or actions before they reach their ultimate fate. Knowing more about what may happen to an applied pesticide can help in making decisions regarding pesticide type, formulation, application method, timing, and frequency.

The objective of pesticide use should be effective pest control with minimal use of the least toxic product available.

END





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**SHORT SUBJECTS  
AND TIMELY TIPS  
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**NEW PERSPECTIVES ON ALTERNATIVE AGRICULTURE**

**'Alternative Agriculture: Scientists' Review,'** a new publication from the Council on Agricultural Science and Technology (CAST), a consortium of 29 food and agricultural science societies. The "Review is a collection of comments on the 1989 National Research Council (NRC) report, **Alternative Agriculture**. Forty-four scientists representing a broad range of scientific disciplines prepared the review. The contributors both support and criticize the NRC report. They agree that the report raises several important issues that contribute to the establishment of a national dialogue and possible research agenda that would assure a sustainable U.S. agricultural system. However, they caution that before major policy shifts are instituted, further research on alternative agricultural practices (e.g., efforts to curtail the use of pesticides) is necessary.

**Alternative Agriculture: Scientists' Review** is available from CAST for \$15.00.

**CONTACT: CAST (IA)**

**(515) 292-2125**

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.





## NEWS FOR YEW

The yew (*Taxus* spp.) has been the subject of folklore, history, myths, and legends for centuries. Many stories have associated the tree with death. The Victorians believed the roots of the yew in churchyards grew into the throats of the dead. The ancient Greeks, Egyptians, and Romans incorporated the yew into funeral ceremonies. Today, the Pacific yew (*Taxus brevifolia*) is being associated with life. The drug taxol, a life-saving chemical extracted from the bark of the Pacific yew, has been shown to effective in treating cancer, according to the National Cancer Institute (NCI).

"The Institute has been looking for a natural product for more than 30 years," explains Dr. Gordon Cragg, a chemist and Chief of the Natural Products Branch at NCI, "and we have found taxol to be the most effective product in curing ovarian cancer. So far, 30 percent of our patients have had a total remission or cure. We are, however, still in the preliminary stages with the drug as far as treating breast and lung cancer." In 1988, Cragg presented a seminar at the Pacific Northwest Research Station (PNW) about a worldwide search the Institute is conducting to find plant compounds useful in curing cancer. More than 120,000 plant compounds were tested and taxol was one of the most promising of those tested. "Because 60,000 pounds of bark is needed to produce 9 pounds of taxol," says Cragg, "enough to treat only 100-200 patients, we needed statistics on bark availability before continuing our experiments."

Chuck Bolsinger, principal resource analyst with the USDA-FS, PNW Station, attended that presentation and soon after began work on a chapter on the Pacific yew for the latest edition of a silviculture manual for trees in North America. "Not much has been known about the tree in the past, and it had not been included in previous silviculture manuals because it wasn't considered commercially important," says Bolsinger. A situation that may change with the current interest in the yew and its properties.

One of the major problems encountered with the Pacific yew as a source for taxol is the fact that the tree grows slowly. "It takes about the same time to grow to 12 inch DBH as other conifers in the same stand take to grow to several times that size," says Bolsinger. "Trees larger than 20 inches DBH and taller than 40 feet are rare within most of the species' range; they account for less than 2 percent of the yew trees tallied in inventory plots.

The Pacific yew is a coniferous tree, found along the Pacific coast, and in the Rocky mountains. It is an understory species found in several forest types, however, it is minor to rare in most stands.

Although the Pacific yew has never been in demand by the forest products industry, it has many uses. Japan was a major purchaser of yew in the mid-1980's. Japanese buyers used it for wood carvings and ceremonial "Toko" poles. The resistance of yew to decay makes is popular for fenceposts. Yew has also found uses in archery bows, canoe paddles, tool handles, gunstocks, boat decking, furniture, musical instruments--an now medicine.

Interest in yew bark for taxol production has changed the outlook for yew. The tree is now in such demand that tree theft is a problem. To avert limiting the natural supply of yew, foresters are taking cuttings for future plantings. In addition, companies like Weyerhaeuser are taking an interest in commercial production. National legislation has been proposed to protect the yew by classifying it as a threatened "strategic national resource."

Similar tree-derived chemicals are being identified as possible pesticides. Take for example the insecticide Margosan-0®, an extract of the neem tree (*Azadirachta*). For more information see "Short Subjects..." Issue No. 88-3 or

CONTACT: CHUCK BOLSINGER  
(OR)

(503) 326-2083





### **MCH UPDATE**

The USDA Forest Service (FS) has, for several years, been trying to complete the registration of the anti-aggregating pheromone (methylcyclohexenone (MCH)) of the Douglas-fir beetle (*Dendroctonus pseudotsugae*).

To date, progress has been slow due to EPA registration requirements, limited, naturally-occurring test sites, and a failed technology transfer agreement with a private sector firm. Now, however, the agency seems to be back on track.

The FS recently contracted with a firm called Wildlife International of Easton, Maryland to complete the following toxicological tests required by EPA:

Full studies, including test protocols, for freshwater fish toxicity;

Toxicity test on freshwater aquatic invertebrates, e.g., *Daphnia* sp.;

Full studies, including test protocols, for avian dietary toxicity;

Avian single dose oral toxicity tests; and

Pending receipt of the full studies identified above, and if it is determined that the LC<sub>50</sub> for rainbow trout is less than 1 part per million (ppm), a fish early life stage test, may need to be performed.

PheroTech, Inc. of Vancouver, B.C. is assisting in this effort by providing the FS with technical grade active ingredient for the tests. In addition, the FS is surveying field units to determine potential MCH use in 1991.

Although any tests done in 1991 will be under the auspices of an Experimental-Use Permit, the FS intends to pursue full registration once the above tests are completed.

For further information

**CONTACT: DENNIS R. HAMEL (W0)**

**(202) 453-9600**

### **BEE BAR CODES**

Bees in Tucson, AZ are sporting a few extra stripes these days--bar codes like those found on retail merchandise. They are the world's smallest bar codes. Nine stripes, less than one-tenth of an inch long, are glued on the thoraces of bees at the USDA Agricultural Research Service's Carl Hayden Bee Research Center in Tucson. An electronic bar code reader at beehive entrances record each bee's coming and goings. Scientists hope the system will reveal such things as how hard honeybees work collecting pollen and nectar, the number of trips each bee makes, the length of time each spends foraging, and how pesticide applications might affect bee-foraging activities.

Previously, researchers marked bees with dyes and paints that often wore off. Other systems required painting a white dot on each bee's back, then hand-painting a number over it after the dot dried. The handling required for this upset the bees normal behavior and flawed research findings.

For more information

**CONTACT: ARS' BEE CENTER (AZ)**

**(602) 629-6380**





### NEW DATA ON GYPSY MOTH DEFOLIATION

As of October 4, 1990, it is estimated that defoliation by the gypsy moth in 1991 will reach a figure exceeding 7 million acres. This is a 4 million acre increase over 1989 and nearly 6 million over 1988. It is, however, still short of the all-time high of over 12 million acres defoliated in 1981.

The table below (which includes final data for all States except Michigan) summarizes defoliation in the generally-infested areas in 1989 and 1990:

STATE	1989	1990
Delaware	0	10
Connecticut	78,430	176,576
Massachusetts	950	83,595
Maryland	97,911	133,062
Maine	35,000	276,425
Michigan	294,344	400,000
New Hampshire	18,395	133,200
New Jersey	137,310	431,235
New York	421,138	383,362
Ohio	0	115
Pennsylvania	1,506,790	4,357,700
Rhode Island	0	0
Vermont	27,335	63,000
Virginia	289,332	594,000
West Virginia	86,736	338,746
15	2,995,559	7,374,816

This trend is likely to result in a concomitant increase in the use of pesticides, especially *Bacillus thuringiensis* (Bt) and diflubenzuron (Dimilin ®), as forest managers attempt to manage gypsy moth populations.

For additional information on pest conditions in the U.S.

**CONTACT: TOM HOFACKER (WO) (202) 453-9600**

### ASTM TO SPONSOR PESTICIDES SYMPOSIUM

The American Society of Testing and Materials (ASTM) is sponsoring a symposium entitled "Pesticide Formulations and Application Systems," November 14-15, 1990, in San Antonio, Texas.

Technical aspects of pesticide application and formulation, contributing to the effective and responsible use of pesticides, are the broad focus of this ASTM symposium. Included in the wide A to Z range of subjects are: Adjuvants, biopesticides, controlled-release formulations, disposal, equipment, environmental impact, novel formulations, regulatory considerations, safety, spray transport, surfactants, solvents, test methods, waste management, and zeta potential. Thirty papers will be presented during the two-day session.

For reservations

**CONTACT: DAVID CHASIN, ASTM (DE) (302) 886-8347**





### **FIFRA BIOTECH RULES PROPOSED**

A 90-day notification process--as to whether a FIFRA Experimental-Use Permit is necessary for notification of biotech proposals has been presented to the EPA, FIFRA Scientific Advisory Panel (SAP). In the preamble to the draft, proposed rule, EPA indicates that the issue is in response to principles handed down by the White House Office of Science and Technology Policy. Throughout the draft preamble, EPA refers to notification or experimental-use permits (EUPs) for only "some" biotech pesticides.

Exclusions from the notification requirement include:

Micro-organisms modified solely by the introduction of unaltered nucleotide sequences using processes, including but not limited to, transduction, transformation, or conjugation; micro-organisms that have been modified solely by the introduction of non-coding, non-expressed nucleotide sequences, and micro-organisms modified by any combination of the above.

EPA noted that the proposed plan would exclude micro-organisms not deliberately altered to impart or affect pesticidal properties. For a pesticide to be subject to notification (and a decision about whether an EUP is necessary for a small-scale field trial), the alteration would also have to include the introduction of genetic material and, "The introduced genetic material must have been intentionally manipulated by the directed addition, re-arrangement, or removal of nucleotide sequences."

The draft rule sets forth an extensive list of factors that would have to be addressed in a notification. For the major heading of "Identity," the listing would include: "(1) Summary of data supporting the taxonomic designation and its interpretation; and (2) means and limit of detection using the most sensitive and specific methods available."

For the heading "Description of the Natural Habitat of the Parental Strains," three factors are necessary: "(1) Physical and chemical features important to growth and survival of the micro-organism; (2) biological features that would impact on the micro-organism, and (3) competitors."

Other major headings include:

- Host range of the micro-organism;
- Survivability of the micro-organism to increase in numbers (biomass);
- Identity of possible transmission vectors (e.g., insects);
- Relative environmental competitiveness compared to the parental strain(s);
- Methods used to genetically modify the micro-organism;
- Potential for genetic transfer and exchange with other organisms; and
- A statement of composition of the formulation to be tested;

In terms of definitions, EPA, in the draft, proposed rule defines non-indigenous, micro-organism-type pesticides as:

Any non-indigenous microbial pesticide that is not otherwise reviewed by another Federal agency, provided that a category of such micro-organisms can be identified that poses a potential for significant risk to human health or the environment when used in testing at small scale."

For additional information, as it becomes available

**CONTACT: FPM, PUM&C (WO)**

**(202) 453-9600**



**PESTICIDE-USE ADVISORY MEMORANDUM ISSUED**

Pesticide-Use Advisory Memorandum (PAM No. 451) was issued by the Forest Service, Office of the S&PF Deputy Chief, September 26, 1990. Information in the PAM deals primarily with a publication entitled "The Weight of Evidence on the Human Carcinogenicity of 2,4-D." The report is the result of a scientific workshop on the potential carcinogenicity of 2,4-D sponsored by the Harvard School of Public Health.

The report is divided into three basic sections: Toxicology, epidemiology, and weight-of-evidence evaluation. The conclusion from the review of toxicology states "Considered collectively, the toxicological data on 2,4-D do not provide a strong basis for predicting that 2,4-D is carcinogenic to humans. 2,4-D is not a potent toxin based on the acute bioassay data, nor is there evidence that the human body produces any particularly toxic metabolites of 2,4-D. Results from the mutagenicity studies indicate that 2,4-D is probably not genotoxic."

The conclusion concerning epidemiology is "By itself, the weight of the epidemiological evidence does not establish a cause and effect relationship between use of 2,4-D and cancer in humans."

Another part of PAM No. 451 is an update on misdiagnoses of Lyme disease. As reported at the 71st Annual Session of the American College of Physicians and in *Rheumatology News*, "Lyme disease is being overdiagnosed and overtreated."

For followup on these issues or the Advisory Memorandum Series

**CONTACT: MAX OLLIEU OR ZDENKA HORAKOVA (W0)**

**(202) 453-9600**

**PESTICIDE APPLICATOR CERTIFICATION AND TRAINING PROPOSAL DUE SOON**

A proposed regulation on certification and training of applicators of restricted-use pesticides is expected to be published by late summer, an EPA official told a recent State advisory group. The Office of Management and Budget approved the proposal on June 30 and following approval at EPA, it will be published in the **Federal Register**.

Under FIFRA, products classified as restricted-use can only be bought and applied by certified applicators or by people under their "direct supervision." The proposal also includes a labeling initiative partially intended to improve the definition of "direct supervision." The following levels of supervision will be proposed for future labels: Level 1--Use only by a certified applicator; Level 2--Use only by a non-certified applicator who is trained, with a certified applicator available within five minutes; and Level 3--Use by a trained, non-certified applicator, with a certified applicator available, but off site. The agency will also seek comment on two additional levels.

If new regulations are promulgated, the FS will revise its EPA-approved "Plan for the Certification of Restricted-Use Pesticide Users," accordingly.

For additional information

**CONTACT: DENNIS R. HAMEL (W0)**

**(202) 453-9600**





## PESTICIDES: AN ESPECIAL THREAT TO CHILDREN?

The dangers of toxic chemicals to children were broadly outlined in a September 13 hearing before the House Select Committee on Children, Youth, and Families. Its major focus was on two programs at EPA. Committee Chairman Miller (D-CA) set the tone of the hearing by saying:

"Millions of American children confront serious environmental risks every day. They may be in schools with asbestos-lined walls or toxic art supplies. They may be in homes tainted with carcinogenic pesticides, painted with lead-base paint and filled with formaldehyde. They may be suffering the secondhand effects of their parents' workplace exposures. Or, if they work themselves, as many migrant children do, they could be picking crops soaked with pesticides."

The Office of Technology Assessment's report last spring on the need for developmental neurotoxicity testing was also brought out in the wide-ranging hearing as the Food and Drug Administration and EPA were chastised for not requiring developmental neurotoxicity tests.

A spokesperson from FDA delivered a series of "coulds" for Congress to consider:

- Mandate more extensive neurotoxicity testing;
- Mandate that neurotoxicity concerns be given greater attention when making regulatory decisions;
- Enhance Federal laws focusing specifically on exposure of children;
- Take action to ensure that workers, particularly women of child-bearing age, receive sufficient information on the neurotoxic potential of chemicals to which they may be exposed, at home or in the workplace; and
- Mandate improved labeling of consumer products with respect to potential neurotoxic effects.

Jay Feldman, of the National Coalition Against the Misuse of Pesticides, focused on the vulnerability of children to lawn care and other pesticides, stating: "While children occupy a very special place in our culture, they do not occupy a special place in our environmental health policies. While children are special to us all, they are virtually ignored in the setting of pesticide policy."

Feldman also noted that in addition to active ingredients, pesticide formulations "contain inert ingredients, which are not listed on the label and include everything from contaminants, emulsifiers, solvents, and preservatives to anti-volatility agents." He continued: "Information on the effects of pesticidal active ingredients is required by law and available to the public. However, a pesticide formulation may consist almost entirely of "inert ingredients."

It is projected that since children have play habits and other behavioral differences, they stand the chance for larger doses of pesticides. Feldman proposes that EPA "be required to immediately establish a policy on tolerances so that decisions are based on the most highly exposed subgroup, which in many cases would be infants and children."

For further information on legislation that might result from these hearings

**CONTACT: FS LEGISLATIVE AFFAIRS (W0)**

**(202) 447-7531**





## PESTICIDES AND POISONINGS

Since 1983, the American Association of Poison Control Centers (AAPCC) National Data Collection System has been compiling an annual report detailing human exposure to poisons. In 1983, 16 Poison Control Centers participated in this effort, reporting 251,012 human exposures. By 1988, the number of participating centers had increased to 64 and 1,368,748 cases were reported. Ingestion was the most common route of exposure (77%). In 1988, 88% of all cases were accidental, while 10% were intentional (6.7% suicide). Sixty-one percent of the poisonings involved children under six years of age.

There were 1,496 exposures to fungicides; 4,549 exposures to herbicides; 41,499 exposures to insecticides; and 10,626 exposures to rodenticides. Of the total 1,368,748 exposures to toxics, 545 resulted in fatalities; of these, a pesticide was identified as the cause of death in only 14 cases. The majority of the pesticide-related deaths resulted from intentional suicide. A summary of the accidental exposures follows: a 69-year-old man died after spraying his yard with copper chloride and benomyl; a 34-year-old man died after ingesting paraquat while spraying weeds, and an 18-month-old child ingested an unknown fire ant killer and died one hour after reaching the hospital.

For further information

<b>CONTACT: NATIONAL POISON CONTROL CENTER (DC)</b>	<b>(202) 625-3333</b>
<b>DENNIS HAMEL (WO) FOR A LIST OF STATE PCCs</b>	<b>(202) 453-9600</b>

## WOOD PRESERVING CHEMICALS

In an August 17 letter to Senator Thad Cochran (R-MS), the American Wood Preservers Institute (AWPI) advised the Senator and EPA (Linda Fisher, OPP) that almost all restricted-use, wood-preserving pesticide manufacturers have agreed in principle to amend their labels. The recommended label changes would require pressure treaters to have drip pads (or equivalent closed system dripage containment) in place as a prerequisite for purchase and use of restricted-use wood preservatives.

The revised labels would include the following:

- Curbed and/or sloped, impermeable process area drip pads (or their functional equivalent);

- Drip pad maintenance sufficient to prevent leakage;

- Monthly drip pad inspections;

- Appropriately constructed storage tanks, piping, and connections; and

- Impervious spill containment of chemical storage tanks.

This is consistent with the industry's stated position that "...every U.S. (pressure treating) wood preserving facility will have an impervious process area drip pad in place no later than January 1, 1993." Use of a restricted-use pesticide in a manner inconsistent with label directions is a violation of the Federal Insecticide, Fungicide, and Rodenticide Act.

For additional information

<b>CONTACT: DENNIS HAMEL (WO)</b>	<b>(202) 453-9600</b>
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## SEX ROLES REVERSED IN SOME MOTHS

Two years ago, entomologist Peter J. Landolt noticed something strange about the mating behavior of the cabbage looper (*Trichoplusia ni*). Caged insects hung upside down, vibrated their wings, raised their abdomens, and partially exposed their genitalia in the familiar stance associated with the release of a sex pheromone.

Many female moths, including cabbage loopers, are known to secrete pheromones, but in this case the chemical producers were males. Landolt and chemist Robert R. Heath at the USDA's Insect Attractants, Behavior, and Basic Biology Research Laboratory in Gainesville, FL. have now isolated and identified a sex pheromone produced by male cabbage loopers--the first direct evidence, they say, that male moths of any species secrete a scented lure to announce their presence to potential mates.

Landolt and Heath say the finding suggests a better moth trap for limiting populations of this and other pests. The discovery also highlights the male looper's unusual role in the insect mating game. Female cabbage loopers seek out males for breeding--a reversal of standard sex roles among insects. The females must also scout for suitable egg-laying sites. In the laboratory, scientists have found that male loopers often mark plants appropriate for egg-laying with a telltale pheromone scent. Thus, female cabbage loopers hit the jackpot when they follow appropriate scent trails, finding both home and hubby with a minimal expenditure of time and energy.

Landolt calls sexual communication among looper moths "a two-way street" that likely evolved to ensure successful mating. The male pheromone consists of a mixture of a rare form of linalool--a sweet-smelling oil otherwise found only in coriander seeds--and cresols, a component of coal tar. Female loopers emit a chemically distinct male-attracting odor, the researchers find.

Males far outnumber females in this species, and efforts to reduce cabbage looper populations by luring males to traps sprayed with female sex pheromone have proved ineffective, leaving a large percentage of males still available for mating. Researchers suggest that traps baited with the newly-isolated male pheromone may work better by targeting a smaller population of females.

Similar pheromone research may lead the way to better uses of pheromones in forest pest management. For example, a list of more than 25 bark beetle, defoliator, and other pest pheromones have been identified. Perhaps some of these could be further researched and developed for use in forest pest monitoring and suppression.

For a copy of the list of forest pest pheromones

**CONTACT: DENNIS R. HAMEL (WO) (202) 453-9600**





### HERBICIDE CURBS HUMAN PARASITE'S SPREAD

In the search for new drugs to be used against human parasitic diseases, a weed killer has emerged as a promising candidate. Farmers in the United States and abroad use an herbicide called trifluralin to eliminate grasses and some broadleaf weeds from fields of soybean, cotton, safflower, and other crops. But, new research on human and mouse cells shows that the herbicide also stops the parasite *Leishmania mexicana* dead in its tracks while leaving the mammalian cells unharmed. This suggests that some close chemical cousin of trifluralin may eventually prove therapeutic for many of the world's 10 to 20 million people infected with leishmania protozoans. These single-celled organisms, common in many developing countries, cause skin ulcers and potentially fatal organ damage.

The odd discovery had its beginnings in work performed two years ago. Dunne Fong and his colleagues at Rutgers University, determined the exact sequence of amino acids that form a leishmania protein called beta-tubulin, a key component of tiny fibers called microtubules. Microtubules provide cells with structural support and are critical to cell division.

Although leishmania parasites belong in the animal kingdom, Fong's team found that the amino acid sequence of leishmania beta-tubulin has more in common with plant tubulin sequences than with animal ones. Reasoning that chemicals toxic to plant tubulin might, if specific enough, interfere with leishmania cells without bothering human tubulin, Fong and Marion Man-Ying Chan began searching for a compound.

The Rutgers researchers tested several herbicides whose **modus operandi** is to interfere with plant beta-tubulin. They reported in **Science** that trifluralin binds to *L. mexicana* beta-tubulin but not to mammalian beta-tubulin. Even at extremely low concentrations, the herbicide interferes with the parasite's replication, cutting infectious spread by half in cultured human and mouse cells, they say. Yet at 20 times this dose, it still leaves mammalian cells unscathed.

Fong and Chan don't propose spraying the herbicide on infected people. For one thing, they note, the compound breaks down very quickly in sunlight--an advantage for an agricultural chemical, but a drawback for a drug applied to skin. Instead, they suggest that scientists might design a closely related compound with anti-leishmania activity and superior pharmacological traits. Moreover, they say, "there may be other potentially useful...agents (against these and other parasites) among the commercially-available herbicides."

Health officials estimate that parasitic diseases such as leishmaniasis, malaria, amoebiasis, and toxoplasmosis affect more than one-quarter of the world's people. For many of these diseases--including leishmaniasis, which is transmitted by a biting sandfly--current drug treatments remain unsatisfactory.

For more information

**CONTACT: RUTGERS UNIVERSITY (NJ) (201) 932-9575**





## **AFRICANIZED HONEYBEES ON THEIR WAY**

The Africanized honeybee (AHB), commonly known as the "killer bee", is expected to spread from Mexico into the southern U.S. in late 1990 or early 1991. As the number of colonies increase, the chances for sting incidents will also increase. News reports of any hospitalizations or deaths caused by mass stinging attacks will probably cause considerable public alarm, and concerned citizens could demand that responsible agencies take actions to ensure public safety. The public visiting National Forests could be particularly at risk because recreation activities are concentrated near water which is where feral (wild) colonies are expected to establish themselves. FS employees working in remote sites, far from medical assistance, may be subject to risk, especially if they are unaware of the threat and do not follow safety precautions.

Besides the adverse impact to the beekeeping industry, several other resource consequences could occur on National Forest System lands. Wildlife may be killed directly by mass attacks, and some species could be displaced by colonization of AHBs. It is likely that colonies will compete for nesting sites with burrowing and nesting wildlife. Domestic animals could be at risk, especially if they are confined in small enclosures where escape from mass attack is not possible. These and other effects may have adverse impacts on certain National Forests; however, it is important not to overreact. Problems with AHBs may not occur. Nevertheless, a well-planned information and education program may be prudent. If you are expected to be impacted by AHBs, be prepared with answers to the following questions, which have been compiled by R-3 entomologist Doug Parker:

How is the AHB different from the domestic honeybee?

Although there are certain differences between the two races as to size, color, wing variations etc., the differences are slight and need an expert to detect them.

What is the threat to human health from the AHB?

Many people imagine "killer bees" as a large swarm in search of humans or animals to attack. This dramatic scenario does not occur. Although the bees are often aggressive, defensive behavior is a more accurate description, since they do not attack unprovoked.

Where will AHBs nest?

AHBs are far less discriminating than domesticated European honeybees. They will nest in many different sites. They may be found in underground burrows, in small crevices of rocks, small tree cavities, old tires, etc.

How should we control the problem on National Forest System lands?

Control of AHBs in remote areas, where there are few colonies of domestic bees, will be most difficult if not impossible. We may have to learn to live with feral colonies in remote areas.

Should domestic honeybees be kept off National Forests?

The single most counterproductive reaction to the influx of the AHB would be to remove domestic honeybee colonies. The continued maintenance of domestic honeybee populations is the best defense against Africanization.

**CONTACT: DENNIS R. HAMEL (W0)**

**(202) 453-9600**



### **SEED AND CONE INSECT COMMITTEE MEETING**

The National Steering Committee--Management of Seed and Cone Insects met in Portland, Oregon, June 12-14, 1990, to review status of field projects, to review technical project proposals, and to visit seed orchards in the Willamette Valley. The Committee accomplished these objectives and through such meetings, focuses the national seed and cone insect management expertise on research and other needs to support the national tree improvement and reforestation program. The committee promotes cooperation among the Federal, State, and private sectors. Eight draft project proposals were reviewed, critiqued, and ranked by priority. Needs identified during the field trip included: Method to monitor off-target movement of pesticides; system to monitor insect pests; reduction in use of pesticides; and pest control strategies tailored to individual orchards. The next meeting is scheduled for June 12-14, 1991, at Boone, North Carolina.

For additional information

**CONTACT: JACK BARRY (CA)**

**(916) 758-4600**

### **GENETIC ENGINEERING FOR BETTER SPIDER SILK**

An Army biologist reports he's found a way to mass-produce one of nature's strongest, most flexible fibers by transferring a silk-spinning gene from a spider into laboratory bacteria.

If the process works, vats of bacteria could churn out large quantities of silk protein, much like the way the biological pesticide *Bacillus thuringiensis* is currently produced. Silk produced in this way could then be drawn into a thread by squeezing it through a small hole similar to a spider's spinneret, says biologist Stephen Lombardi.

Lombardi isolated the gene from the golden orb weaver spider, which produces especially strong silk. He specifically chose the gene for the spider's "drag line," by which the spider hangs. This silk is five times stronger than steel wire of the same thickness and can be stretched 18 percent without breaking. The bacteria-produced silk is expected to have wide-ranging uses.

**END**





Forest Issue No. 90-15  
Pest September 21, 1990  
Management (2150)

**SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS**

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**JOINT MEETING OF NATIONAL STEERING COMMITTEES PLANNED**

A joint meeting of the National Steering CommitteeS for Application of Pesticides (Western Defoliators Gypsy Moth and Other Eastern Defoliators). The Western Defiliator Committee will meet November 6 and the Eastern Defoliator committee will meet November 7. Separate meetings, as opposed to concurrent sessions, have been scheduled to encourage cross participation in the meetings. On November 8 there will be a joint field trip with USDA-APHIS and Utah State cooperators.

For additional information on the meetings or the field trip

**CONTACT: JACK BARRY (CA) (916) 758-4600**

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.





**ALDICARB-POISONED WILDLIFE FOUND**

According to Gary Gerhardt, News Staff writer for the **Rocky Mountain News** in Denver, Colorado, a recent bear and other wildlife kill has been attributed to the insecticide aldicarb (Temik®). Five bears--two males, a female, and two cubs--were spotted September 10 by a bow hunter on the White River National Forest. Also poisoned at the site were gray jays and magpies.

District wildlife manager Jeff Madison said the bears ate a lamb carcass that had been laced with the highly toxic insecticide. Aldicarb is a restricted-use pesticide not registered for baiting carcasses for animal damage control.

A Colorado wildlife law enforcement officer said "State law forbids ranchers from randomly placing poison to kill predators." In addition, Forest Service policy requires approval of pesticide uses by licensees and permittees. These infractions are punishable by a \$200.00 fine. In addition, a \$2,000.00 reward has been offered to anyone supplying information that leads to the arrest and conviction of the person(s) who poisoned the bears.

Forest Service personnel are reminded that all incidents such as this are to be reported immediately to the Washington Office (FSM 6732.12, FSM 2158.6, and FSH 2109.12 (Chapter 50).

For additional information

<b>CONTACT: OPERATION GAME THIEF (WITH INFORMATION)</b>	<b>1-800-332-4155</b>
<b>DENNIS R. HAMEL (ON FS POLICY IN FSM/FSH)</b>	<b>(202) 453-9600</b>

**NURSERY AND SEED ORCHARD MANAGEMENT ACTIVITIES MODIFIED**

In the September 7 issue of the **Federal Register** (Vol. 55, No. 174) the USDA Forest Service announced a modification of its plans to prepare an environmental impact statement (EIS) for management of the Humboldt and Placerville Nurseries in California, the Chico Tree Improvement Center (seed orchard) in California, and the Coeur d'Alene nursery in Idaho. The reasons for the modifications include: Insufficient pesticide information at the present time, planned development of a separate seed orchard EIS, and planned development of a Northern Region seed orchard EIS.

For additional information on these modified plans

<b>CONTACT: JOSEPH MYERS (ID)</b>	<b>(208) 765-7375</b>
<b>CATHY STANKO (CA)</b>	<b>(916) 895-1176</b>



### **NEW MICROBIAL PESTICIDE OF THE FUTURE?**

A tiny microbe in female *Trichogramma* wasps has been shown to be able to turn the tables on the usual sexual dimorphism characteristic of insects. *Trichogramma* females have been shown able to reproduce without male counterparts, once they have been "infected" with a certain micro-organism.

Mysteriously, the unnamed micro-organism alters the female's reproductive mechanism so that offspring are produced without male fertilization (a process in nature called parthenogenesis). Normally the female must mate to produce female offspring, while male offspring result from unfertilized eggs. The finding is encouraging to biocontrol users, who release the female wasps by the hundreds of millions each year to control a wide variety of insect pests. The wasps lay their eggs inside the eggs of insect pests and limit the pests' ability to increase their populations.

Microbes that are responsible for manipulating the sex ratio of another organism's offspring have been previously documented, but a microbe that can change an organism's reproduction method is thought to be unique to wasps. This could eventually lead to the development of new microbial pesticides in the future.

For additional information on this work, which is being done by an entomologist at Rutgers University,

**CONTACT: RICHARD STOUTHAMER (NY)**

**(716) 275-3889**

### **BETTER BREATHING ON THE WAY**

**Insight** magazine reports, in a brief article, that forest fire fighters may be able to breathe easier in the near future. The dangers of fighting forest fires include smoke, burn damage to the eyes, throat, and lungs, and contamination by pesticides in previously-treated areas (See related article in "**Short Subjects...**" Issue No. 90-8).

Unfortunately, many volunteer and full-time, paid fire fighters are ill-equipped to avoid these threats, often wearing only a thin bandanna to protect their faces and help them breathe. But a series of specially-designed masks invented by an industrial hygienist could make the job a good deal safer by purifying the air to which they are exposed.

The respirator, developed by Jim Johnson of the Lawrence Livermore National Laboratory in Livermore, California, looks like a conventional gas mask, but it has an added filter attachment to draw in clear air while blocking carbon monoxide, soot, or chemicals brought on by fire situations. Fewer respiratory problems and eye irritations have been reported by the laboratory's own fire fighters who have worn the masks while battling forest fires.

Two other "smart" mask models still in the prototype stage at the laboratory incorporate electrochemical sensors that analyze the levels of oxygen and carbon monoxide in the air and warn the user via a light on the mask if the level of carbon dioxide is getting dangerous. Likewise, the smart system warns if oxygen levels are dangerously decreasing. Both models are expected soon.

**CONTACT: LAWRENCE LIVERMORE NATIONAL LABORATORY**

**(415) 422-1100**





### AG<sup>®</sup>PILOT FEATURES AGDISP

The September 1990 (Vol. 12-X, No. 9) issue of **Ag<sup>®</sup>Pilot International** has an excellent article entitled "Predicting Deposition...Rotary Wing Aircraft." Co-authored by Dr. Alan Bilanin, Bob Ekblad, and Jack Barry, the article features a discussion of the computer-based, spray-prediction tool called AGDISP (See "**Short Subjects...**" Issue Nos. 90-7 and 90-10). Illustrated with color photographs and line drawings, the article provides examples of application using USDA Forest Service experiences. For a copy of the article

**CONTACT: JACK BARRY (916) 758-4600 (CA)**

### BT BIOBURDEN PERSISTS

At a recent meeting of the Eastern Spruce Budworm Council in Sault Ste. Marie, Ontario, it was reported that

"The saga of contaminated *Bacillus thuringiensis* (Bt) products continues in Ontario. A quantity of Dipel 132 was purchased in 1988. Results of the quality control tests conducted by Abbott at the time were within Agriculture Canada's limits. Some of the product not having been used in the 1988 program, it was stored over the winter. Prior to using it in 1989, samples were taken and tested by the Ontario Ministry of Health laboratory in Toronto. Results of the 1989 tests indicated unacceptable levels of alien bacteria, using Agriculture Canada guidelines. The product was retained in Ontario and retested by the Ministry of Health laboratory, and by Abbott and the Quebec Department of Energy and Resources laboratory in Ste. Foy. Again results from the Ministry of Health tests showed unacceptable levels of alien bacteria, but results from both Abbott tests and the Ste. Foy laboratory test contradict this. These discrepancies are being investigated further by the Canadian Ministry of Natural Resources."

These circumstances indicate that users of Bt for US forestry purposes should continue to be vigilant about Bt bioburden and the quality of products intended for use. A set of quality control standards (similar to what the Canadians use) for evaluation of biological pesticides is available from Forest Pest Management in the Washington Office.

**CONTACT: DENNIS R. HAMEL (DC) (202) 453-9600**

### BEWARE OF INSECT INGESTION

At this time of year it is not unusual for children playing out-of-doors to make contact with "woolly bears." The fuzzy, black and orange caterpillars, which are also called "hedgehogs," are the larvae of moths of the family Arctiidae. On September 19, the editor of "**Short Subjects...**" was called by a frantic, Montana grandmother. She indicated that her 10-moth-old grandchild had just ingested a woolly bear and was in pain. Contact with doctors in Montana provided little help, but subsequent calls to the National Capital Poison Control Center provided some advice. Although it is still undetermined if the child's reaction was due to the physical irritation of urticating hairs (setae) or an emetic chemical, Numzit<sup>®</sup> was used to relieve the pain. In spite of this, facial swelling has persisted. Therefore, be aware of child curiosity and prevent insect ingestion. If it or other kinds of chemical ingestion (e.g., pesticide poisoning) occur

**CONTACT: AN APPROPRIATE POISON CONTROL CENTER (202) 625-3333**





### **BT, BATS, AND BIRDS**

Millions of acres of forest in the northeastern United States are defoliated by the gypsy moth each year. Defoliation may reduce the food supply for many native species, which could adversely affect their populations. Because lepidopterans are a major component of the diet of many vertebrates (including bats and birds), population reductions of gypsy moth and other lepidopterans could affect other species farther up the food chain.

One of the methods available for controlling gypsy moth populations and reducing defoliation is the application of *Bacillus thuringiensis* (Bt). While Bt has been shown to have no direct toxicity to non-target vertebrates, its effects on non-target lepidopterans, are poorly known.

The effects of Bt on non-target lepidopterans is of great interest to entomologists, environmentalists, and others. It has been addressed in the AIPM Final Environmental Impact Statement as a research need. The concern about the potential effects of gypsy moth defoliation and Bt application on populations of native lepidopterans are of particular relevance in West Virginia, because the gypsy moth's range has expanded into that of the endangered, Virginia big-eared bat. This bat is potentially at risk because studies show that moths compose greater than 95 percent of the bat's diet. Food reduction resulting from either gypsy moth defoliation or Bt applied to prevent defoliation could negatively impact this already endangered species.

A study is being performed under a cooperative agreement between AIPM, the Northeastern Forest Experiment Station, and West Virginia University. The objectives of the study are to determine the effect of Bt, as well as gypsy moth defoliation, on non-target native, larval and adult lepidopterans. Special focus will be on the food of the endangered Virginia Big-eared Bat (*Plecotus townsendii virginianus*). For additional information on this study

**CONTACT: DR. ROBERT WHITMORE (304) 293-3911**  
**(WV)**

In the same issue of the **AIPM Demonstration News** is a Program Status Report. The Status Report is intended for use by legislators, and other officials at the State, Federal and local level. The Status Report is also intended to update interested members of the public. For a copy

**CONTACT: TERRY FREY (304) 291-4891**  
**(WV)**

### **AERIAL SPRAYING TECHNOLOGY HANDBOOK AVAILABLE**

The USDA Forest Service, Northeastern Area and Northeastern Forest Experiment Station, in cooperation with the Northeast Forest Aerial Application Technology Group (NEFAAT) recently released a publication entitled **"Aerial Spraying for Gypsy Moth Control: A Handbook of Technology."** Edited by Richard Reardon, the 146-page publication (NA-TP-20) has been published as part of the USDA Forest Service program to improve aerial application of insecticides, specifically those used on eastern hardwoods.

The handbook combines, in a single publication, relevant historical and current information concerning aerial application technology, especially as it relates to gypsy moth management.

The handbook is available from the AIPM offices

**CONTACT: DICK REARDON (WV) (304) 291-4891**



**NATIONAL AERIAL SPRAY MODEL ADVISORY COMMITTEE MEETS**

A meeting of the National Aerial Spray Model Advisory Committee met September 11 and 12 in Atlanta, Georgia to coordinate technology transfer and development of the FSCBG and AGDISP aerial spray models. The purpose of the meeting was to communicate the current status, technology transfer, and development needs with persons and organizations who have an interest in these models.

In addition to Washington Office (Davis and DC) personnel attending, representatives from R-8 and NA also attended, as did Mike McManus of NE-FIDR. Other agencies attending included APHIS, EPA, and DOD. Representatives from Pennsylvania State University, the University of Connecticut, and the University of Georgia also attended. Industry representatives included Dupont and Dow/Elanco. A Forest Service contractor, Continuum Dynamics, Inc., also participated in the meeting. The New Zealand Forest Service sent a representative with financial support coming from the forest industry there. Others including R-6, ARS, Canada, and U.S. Air Force could not attend due to travel restrictions or conflicts.

For a copy of the complete notes from this meeting

**CONTACT: JACK BARRY  
(CA)**

**(916) 758-4600**

**END**





SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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CORRECTION

In "Short Subjects..." Newsletter 90-12 an error was made in reporting the population reductions for Western Spruce Budworm on the Yakima Indian Reservation. Iral Ragenovich (R-6) was kind enough to advise us that the use of the figure 96.8% population reduction was inappropriate. She says that, "Since no prespray larval sample was taken, we cannot say anything about what percent population reduction was achieved. All we should say is that the population was reduced to 1.04 larvae per 18-inch branch. The early larval density sample which is being used to compute the percent reduction figure is just that. A sample taken at very early instars to determine a threshold density at the beginning of the project. It is neither an accurate measure of the actual population at the time of sampling, nor is it representative of the existing population at the time of treatment. It is very likely that upwards of 60 percent natural mortality will occur in the population between the time of an early larval density sample is taken and an area is treated." Iral is correct and we regret having perpetuated a false presentation of data (Ed.).

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.





PESTICIDE OUTLOOK

A new publication entitled *Pesticide Outlook* is being published and distributed by the Royal Society of Chemistry, Information Services, Great Britain. The publication is issued quarterly and is described as "a review and news journal of current developments on all aspects of pesticides and their use." The journal intends to publish a blend of reviews and overviews on developments worldwide, not only in crop protection, but also in the use of pesticides in animal and human health, wood preservation, amenity use, et cetera. Improved application techniques, integrated pest management, and biological control will also be covered in future issues. There is a growing desire for more cost-effective, better-targeted, and more environmentally-acceptable pest control measures and *Pesticide Outlook* may provide some answers.

WO-Forest Pest Management will subscribe to this new journal and appropriate items will be summarized in future issues of "Short Subjects..." However, if you wish to obtain your own subscription

CONTACT: THE ROYAL SOCIETY OF CHEMISTRY      TEL. (0223) 420066

NATIONAL ADVANCED PESTICIDE MANAGEMENT TRAINING TO BE OFFERED BY FS

Nominations are due November 1 for the next "National Advanced Pesticide Management Training Course" to be held in Marana, Arizona, February 18 - March, 1, 1991. The course goal is to provide a forum for pesticide technology transfer.

The 70-hour course is designed to prepare Forest level professionals to coordinate and manage pesticide training and use activities. Students will be provided classroom instruction and field exercises covering pesticides, pesticide application, and environmental monitoring.

Upon successful completion of the course, attendees will be able to:

- o Provide Region and Area pesticide-use training; and
- o Conduct quality pesticide projects using state-of-the-art technology.

The course is intended for silviculturists, range conservationists, entomologists, pesticide coordinators, and resource managers responsible for coordinating and conducting pesticide training and pesticide projects.

Priority for attendance will be given to persons whose current or future assignments involve responsibilities for coordinating and managing pesticide-use training and pesticide projects.

For additional information on the next National Advanced Pesticide Management Training being offered at the National Advanced Resource Technology Center

CONTACT: DIRECTOR, NARTC (AZ)      (602) 670-6414



EAST COAST ENTOMOLOGY

Entomologists in Massachusetts and Connecticut, where Lyme Disease was first reported, are about to enlist tiny wasps in their fight against the ticks that vector the disease. For example, the Massachusetts Food and Agriculture Department plans to release between 20,000 and 50,000 of the wasps called Hunterellus hookeri. Females of this species lay their eggs in the young of hard-shelled ticks, such as wood ticks and deer ticks. Deer tick young feed on small mammals such as mice before becoming big enough to feed on deer. When the eggs hatch, the larval wasps feed on the young ticks, eventually killing them.

"The hope is that if we repeatedly release (large numbers of) this wasp, it will knock down the overall tick population, thereby reducing disease transmission," says Dennis LaPointe, a technician working on the project.

Lyme disease is caused by a species of bacteria that lives in blood. People get the disease when they are bitten by a tick that has fed on the blood of an infected mammal. The tick bite may be hard to detect, but as the disease develops, it can cause fatigue, arthritis, headaches, and, less commonly, heart problems, meningitis, and other chronic, neurologic problems. Between 5,000 and 8,000 cases of Lyme Disease are reported in the United States each year. The majority are on the East Coast.

For more information on Lyme Disease

CONTACT: DENNIS R. HAMEL

(202) 453-9600

PESTICIDE POSITION AVAILABLE

The R-8 (Atlanta, Georgia) Forest Pest Management staff recently announced plans to fill a pesticide coordination position at the GS 11/12 level. The person selected for the position will serve as a pesticide specialist providing technical leadership, direction, and expertise in the field of pesticides used in forestry and forestry-related research in the Southeast. The incumbent will also provide expert advice, counsel, and technical assistance in pesticide-use to forests, field offices, State foresters, industrial forest land managers, and others.

The pesticide specialist will assist the Director in the development of the Forest Pest Management plan of work, especially as it relates to pesticide-use management and coordination. He/she will also be responsible for maintaining and updating information in the Region's vegetation management environmental impact statements and related documents.

The closing date for this job announcement (No. R-8, 214-90) is September 20, 1990. Mail applications to USDA Forest Service, 1720 Peachtree Rd., NW, Room 776, Atlanta, Georgia, 30367.

For additional information about the position

CONTACT: HARVEY TOKO (GA)

(404) 347-2961





## INTERNATIONAL CONFERENCE ON DIFFUSIBLE PRESERVATIVES

The USDA Forest Service, in cooperation with the Mississippi Forest Products Laboratory, Mississippi State University; the Forest Research Laboratory, Oregon State University; and the Forest Products Research Society are sponsoring the "First International Conference on Wood Protection with Diffusible Preservatives" at the Doubletree Hotel, Nashville, Tennessee, November 28-30, 1990.

The conference will provide a forum for review of technology dealing with wood protection with water-diffusible preservatives. The conference will include overviews by internationally-known researchers from countries where this technology has been in use for many years. It will also include an indepth look at the most recent work done in the U.S. Discussions will include commercial experiences and there will also be a session on research needs. Most aspects of this promising new technology will be discussed, either in presentations or in poster sessions. Interest in wood protection with diffusible preservatives is high because of low-level toxicity to humans and the variety of products that can be treated.

For more information:

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DAVE DRUMMOND	(318) 473 7286
LONNIE WILLIAMS	(601) 864 3991

## EPA "SAFER" PESTICIDE POLICY TAKING SHAPE

According to a "Pesticide and Toxic Chemical News" item (Vol. 18, No. 40, August 8), EPA's "safer" pesticide policy is taking shape and is expected to be published for comment as an Advance Notice of Proposed Rulemaking (ANPR) in the Federal Register this spring.

Anne E. Lindsay, Director, Registration Division, EPA Office of Pesticide Programs (OPP), said the first step in the "safer" pesticide project is the development of screening criteria for new chemicals. Under the proposed new plan, a pesticide found "clean" during acute and chronic human toxicity and ecological toxicity testing will be assigned to an accelerated review process. As a second step in the process, OPP is considering the use of "safer" labeling on "safer" pesticides.

This new, "safer" pesticide labeling policy should bode well for Forest Service-registered pesticides (e.g., the nucleopolyhedrosis viruses), which have, since their initial development, been considered "safer" than many of the conventional chemical pesticides used in forestry.

To keep apprised of events related to this issue

CONTACT: DENNIS R. HAMEL (WO)	(202) 453-9600
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### PEAR THRIPS CONFERENCE TO BE HELD

A Conference on Thysanoptera will be held October 23 and 24, 1990 in South Burlington, Vermont. The purpose of the conference will be to share information on the pear thrips (Order Thysanoptera). The conference will include keynote addresses by: Professor T. Lewis, Acting Director of Research at the Institute of Arable Crops Research, Rothamsted Experimental Station, England; and Dr. Bruce Heming, a well-known thrips specialist from the University of Alberta.

Talks and poster displays will be presented by researchers from Arizona, Florida, Georgia, Illinois, Massachusetts, New Hampshire, New York, Pennsylvania, and Vermont. The primary focus of this conference is to report results of on-going pear thrips research. In addition, a pear thrips damage assessment workshop will be offered.

Because of an anticipated large response to this conference, as well as the fact that this conference will take place during Vermont's "leaf peeping" fall foliage season, it is recommended that if you plan to attend, you make reservations early

CONTACT: EVA DOANE (VT)  
UNIVERSITY OF VT

PLANT AND SOIL SCIENCES  
BURLINGTON, VT 05405

### UNUSUAL SOURCE OF ENTOMOLOGICAL INFORMATION

Omni, billed as the magazine of the future, is the source of several bits of unusual entomological information in their September, 1990 issue (Vol. 12, No. 12). Beginning with their cover art, which depicts acid raindrops falling on a forest butterfly, other articles in the issue range from the role of insects in ecosystems to insects as human food sources. Although not all are related to pesticide-use issues, we think you will find them of interest (Ed.).

Cover Art: A reproduction of an acrylic painting by Polish artist Rafal Olbinski, which, according to the caption, " Acid raindrops keep falling on our heads. A glorious butterfly flutters among the forest foliage, collecting the last drops of a spring shower. But the acid rain is deadly and burns right through the insect's wings."

"First Word" Editorial: Written by world-renowned social scientist and hymenopterist E.O. Wilson, who is Baird Professor of Science, Harvard University. Dr. Wilson has been the recipient of both the National Medal of Science and the Pulitzer Prize. In his guest editorial he writes, "If all mankind were to disappear, the world would regenerate back to the right state of equilibrium that existed 10,000 years ago. If insects were to vanish, the environment would collapse into chaos."

Dr. Wilson also says "the future task of entomology in the years ahead is one of the most important and complex challenges in all sciences." Other remarks in his editorial, including the mention of the role of pesticides, are worth reading.



**"Butterfly Farming:"** We all know the story--lumbering, mining, and farming hewing away the rain forests, threatening these fragile ecosystems with extinction. But in the remote highlands of Papua-New Guinea, Peter Clark teaches native peoples how to make a profit from the rain forest without destroying it. For the past 12 years, Clark and his staff at the Insect Farming and Trading Agency have coached and encouraged Islanders in the art of raising and harvesting tropical insects (including beetles, spiders, and grasshoppers) prized by collectors. Raising insects can increase the average Islander's income from about \$50 a year to between \$1,000 and \$3,000 per year.

"The economic value of insects is commonly a negative one, because they destroy crops," says Clark. "But, in the rain forest they can make us good money." Agency staffers teach farmers to plant nectar-bearing flowers near the edge of their plots to attract wild adult butterflies. Then, they place vines at the center to encourage adults to lay eggs. Farmers then coax the eggs through the stages to adulthood avoiding the use of pesticides. About 70 percent of the butterflies are collected, preserved, and shipped to Clark for sale; the rest are returned to the wild.

**"Yummy, Yummy--Bugs for Your Tummy!"** Gourmands and nutrition freaks, brace yourselves: A pound of white ants or termites is one of the highest sources of energy known--and when cooked properly they are quite tasty according to Gene DeFoliart, Professor Entomology at the University of Wisconsin--Madison.

"There's an entire kingdom of edible organisms that we have bypassed for no good reason," says DeFoliart. "We should judge these as we do other plant and animal foods." To encourage people who might otherwise balk at a handful of crisp, fried ants, DeFoliart edits "The Food Insects Newsletter (circulation 450). Each issue includes letters, articles, and recipes for such items as Cajun Crickets and Grasshopper Fritters.

Given insects' importance as a food source in many Asian and African countries, DeFoliart finds American disdain towards entomophagy unfounded. "Americans need to become aware of the fact that insects are an important source of nutrition in the Third World and, with scientific input, might make a significantly greater contribution toward helping solve problems of human malnutrition.

**"US-USSR Locust Strike Force:"** But, if we can't eat them, let's nuke them! What will happen to all those high-powered lasers if star wars never goes online? If University of Arizona optical sciences professor Peter Franklin has things his way, they'll be used as giant bug zappers, in place of pesticides.

Let's treat Africa's locust control problem as a military problem," suggests Franklin. "Search, find, and destroy." The Soviet Union agrees with the suggestion: Researchers from the USSR Academy of Sciences and the U.S. are cooperating in the development of a battle plan. The effort--a joint locust strike force would start by scanning reconnaissance photos from satellites, looking for telltale patchy vegetation that signal the presence of locusts. Once the strike force confirms the sighting, laser-armed attack helicopters could be dispatched to the scene sans insecticides.





**"Nerve Worms:"** A neurobiologist at the University of Texas at Austin has developed a promising technique that could enable surgeons to rejoin severed nerves, and he's done it by experimenting on spineless, lowly earthworms.

George Bittner, a zoology and pharmacology profesor, began working with earthworms because their nerves, like those of humans, are surrounded by a fatty substance that forms a membrane sheath around nerve fibers. Bittner has already successfully reconnected both ends of the worm's severed nerves by dipping them into a chemical substance called polyethylene glycol. "That causes the cells of the membrane to fuse together at the point of contact," Bittner says. If the process is successful with rats, Bittner says it could be used to repair human nerve damage." Perhaps even pesticide-related neuropathies.

**"Cockroach Research:"** If every cockroach on the planet were suddenly banished to the great roach motel, few of us would miss them--except, perhaps, Ivan Huber. Huber is an entomologist at Fairleigh Dickinson University in Madison, New Jersey. He says cockroaches could take the place of mammals in some biomedical research. "Their nerves are very similr in structure to our own," he says. "They transfer nerve impulses across synapses in a way that's identical to our own. They also use many of the same neurotransmitters. And they have a structure that's analagous to our pituitary gland."

Everybody knows that cockroaches breed quickly, and are cheap to feed. Despite these advantages, however, Huber suspects that the use of cockroaches in biomedical research will catch on very slowly. "Some people might be squeamish. You might expect animal rights activists (anti-vivisectionists) to support the use of cockroaches in research. However, according to representatives of the Ethical Treatment of Animals (PETA), "We oppose the use of any livng creature in medical research!"

**"Bug Oven:"** Termites and cockroaches have a way of making a homeowner's life miserable. But there is hope: A new procedure can purge walls, floors, and joists of insects by baking them. For more than 60 years, scientists have known that termites and roaches will die at temperatures over 120°F. That's why Walter Ebling, a retired UCLA entomologist and the late Charles Forbes, former earth scientist at California State University, dreamed up the idea of sealing a home in what amounts to a giant nylon bag and pumping in hot air. Their procedure uses propane heaters to flood 140°F air into a sealed house via collapsible Mylar ducts, killing pests in the egg, larval, and adult stages. Thermal pest control, as the process is called, doesn't use toxic chemicals. This is a strong selling point for pest control firms not wanting to used pesticides.

During a "bug oven" operation, pianos, low-melting-point items like candy and candles, and electrical equipment has to be shielded, but these are relatively minor inconveniences. Like most types of conventional fumigation, the current treatment controls pests but provides no safeguard against reinfestation.

For followup on any Omni items on entomology

CONTACT: BOB GUCCIONE, EDITOR

(212) 496-6100





EPA BANS MOST USES OF 1080

EPA recently took steps to ban virtually all uses of Compound 1080 (sodium fluoroacetate), noting that the substance was acutely toxic to non-target mammals and birds and posed a threat to endangered species. The agency order (See Federal Register (Vol. 55, No. 154, Aug. 9) cancelled the Tull Chemical Co.'s 1080 Technical Grade Product for use in rodenticides for failing to meet registration requirements. They also suspended Klamath County, Oregon's Special Local Needs (Sec. 24c) registration for not satisfying a Data Call-in notice. They subsequently cancelled the registration for failure to pay registration maintenance fees.

EPA, however, left standing the registration for predator control uses of 1080 for toxic livestock protection collars. Montana, Wyoming, New Mexico, South Dakota, Rancher's Supply of Alpine, Texas, and the U.S. Department of Agriculture hold Federal registrations for 1080 Toxic Collars.

The Tull Company manufactures the only 1080 Technical used in rodenticides sold in the U.S., but declined to submit required data, although the California Department of Food and Agriculture (CDFA) agreed to supply the data for the company. California was using more than 80 % of the 1080 used as field rodenticides, with the bulk used for control of ground squirrels.

Colorado, Nevada, and Oregon are the other principal users of 1080 for controlling ground squirrels, prairie dogs, and meadow mice. California, Colorado, and Nevada had used 1080 under intrastate registrations until 1985, when Federal registration requirements were imposed. Other States, which at one time used 1080 for rodent control, relied on the U.S. Department of Interior's registration, which was withdrawn following an Executive Order prohibiting use on Federal lands.

Due to EPA-identified data gaps and potential threat to endangered and other non-target species, the agency has banned most uses. This followed their 1972 cancellation of 1080 for predator control, but which was followed in 1983 by reinstatement (citing significant new evidence) for use in livestock protection collars and single lethal dose baits. This registration is now held by the USDA Animal and Plant Health Inspection Service (USDA-APHIS).

The Rebuttable Presumption Against Registration (RPAR) notice on 1080 was first published in December, 1976. It wasn't until May, 1988, however, after a number of meetings and time extensions on data requirements, that the data submitted were not satisfactory, and the only 1080 Technical Product that could be reformulated into a rodenticide bait was cancelled by the agency in February, 1989. EPA issued a conditional registration to USDA in June, 1989 for a 1080 Technical Product to be used only in formulation of livestock protection collars.

To keep current on 1080 registration activities

CONTACT: CRAIG RAMEY (CO)

(303) 236-7896



TRIP REPORTS AND MEETING SUMMARIES

**SECOND INTERNATIONAL CARIBBEAN CONFERENCE ON ENTOMOLOGY:** During the week of August 6, 1990, Jesus A. Cota, WO-FPM, presented a paper on Forest Service cooperation with Latin America countries at the Second International Caribbean Conference on Entomology, Cancun, Mexico.

The conference was sponsored by the Florida Entomological Society. Over 300 professional entomologists and their spouses attended. The program included two symposia and 120 technical papers which were presented by professionals from eight countries in the Caribbean, and Central and North America.

It is interesting to note, that although many of the Latin and Caribbean countries are concerned about global environmental issues such as tropical deforestation, global warming, and acid rain, few of these countries have an existing forest protection program. The conference, therefore, was an opportunity to make contacts which will lead to future cooperative efforts between the Forest Service and these countries. For followup

CONTACT: JESUS COTA (WO)

(202) 453-9600

**PESTICIDE ACTIVITY REVIEW IN ALASKA REGION:** An Activity Review of Region 10 was conducted from August 13-17, 1990. The team leader was Max Ollieu, Assistant Director, FPM/WO, team members included Gene Lessard, Group Leader, Forest Pest Management, R-10, and Ed Holsten, Entomologist/Regional Pesticide Coordinator, R-10. The purpose of the review was to examine the entire scope of pesticide-related activities in the Region. A list of twelve review areas was indicated in the original call letter.

The team opened the review in the Regional Office in Juneau. The field phase of the review involved visits to the Chugach National Forest and Institute of Northern Forestry. Discussions were also held with personnel from The Alaska State Forestry, Alaska Cooperative Extension Service, and Alaska Department of Environmental Conservation. A closeout with State and Private Forestry Director, Paul Forward, and Chugach National Forest Supervisor, Bruce Van Zee, was held on Friday, August 17.

The draft report shows the team commended the Region for work in six areas: (1) Review itinerary and logistics, (2) working relationship with PNW, (3) multi-region risk assessment, (4) assistance to Chugach National Forest/spruce beetle infestation, (5) pest scout program, and (6) forest health plan. The team identified two pesticide-related issues which they believe warrant the Region's attention. These include: (1) Pesticide storage, and (2) NEPA documentation for management of spruce beetle infestations. Situation statements, alternatives and team recommendations are provided for the issues.

Four observations were addressed: (1) Interagency cooperation, (2) herbicide field trials, (3) environmental fate studies, and (4) pesticide newsletter. For additional information:

CONTACT: Max Ollieu, (WO)

(202) 453-9600





**ANIMAL DAMAGE CONTROL MEETING HELD:** A National Animal Damage Control Working Group Meeting was held recently in Redding, California. The meeting was attended by representatives from Regions 1, 4, 5, and 6; PSW and PNW Research Stations; Washington Office Timber Management, and Forest Pest Management. Also in attendance were representatives from the Animal and Plant Health Inspection Service (USDA-APHIS) and the University of California.

Dan Campbell (APHIS) reported on two NAPIAP-funded studies that tested various strengths of strychnine-treated baits for pocket gopher control. He found that the 0.5% strychnine bait was the best (100% control) and recommended that the registration be maintained by USDA-APHIS-ADC. One problem observed on test sites was complete re-invasion of the plots within one year.

The University of California reported on a gopher control study using strychnine-treated bait encapsulated in paraffin. It had been hoped that this would be available for multi-generation pocket gopher control; however, reinvading gophers showed no interest in baits remaining in tunnel networks.

APHIS-ADC also reported that the comment period on their Draft Environmental Impact Statement for Animal Damage Control was extended to September 30, 1990.

For further information on this meeting or events discussed there

CONTACT: HUGH BLACK (PNW)

FTS 423-6927

END





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PESTICIDES IN THE NEXT DECADE

A National Research Conference entitled "Pesticides in the Next Decade: The Challenges Ahead" is being jointly sponsored by the Virginia Water Resources Research Center and the Virginia Polytechnic Institute and State University. (See "Short Subjects..." Issue No. 90-4, March 6). The conference is scheduled for November 8-9 in Brookfield, Virginia.

To be included in discussions at the conference are:

- Pesticides in Drinking Water;
- Pesticide Policies and Decisionmaking;
- Pesticide Resistance and Residues;
- Pesticide Degradation in Soils;
- Pesticide Removal and Disposal;
- Risk Analysis and Environmental Assessments;
- Pesticide Registration/Regulation;
- Trends in Pesticide Use, and
- Pesticide Use Models (e.g., AGDISP and FSCBG).

The conference fee is \$120.00. For additional information

CONTACT: SUSAN PARKER

(703) 231-5624

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.



## pH AND PESTICIDES

According to an article in the latest issue of *American Nurseryman*, pesticides fail for numerous reasons. A grower may choose the wrong chemical or formulation, or apply the product with improperly calibrated equipment. Other mistakes include applying a pesticide when the targeted pest is not susceptible, failing to achieve good coverage of the target site, or using products whose shelf-life has expired.

Another potential problem is the quality of water used to mix and apply pesticides. Recent studies indicate that alkaline water can hasten the breakdown of certain pesticides. Most pesticides undergo some degree of decomposition in alkaline solutions--liquids with pH values of 7.0 and above. During this process, called "alkaline hydrolysis," pesticide molecules break apart and recombine into new molecules that may or may not affect the targeted pest.

Researchers have performed many studies on alkaline hydrolysis of particular pesticides; however, the great variation in experimental conditions makes it difficult to compare results. Nevertheless, a few general conclusions are possible.

The studies indicate that insecticides are less stable in alkaline water than are fungicides or herbicides, and organophosphate and carbamate insecticides are more affected by alkalinity than other types of insecticides. The table below illustrates how hydrolysis affects a number of common pesticides. These test results, reported by Ohio State University researcher R. A. Chapman, reveal how water pH influences the half-lives of six insecticides. (Half life in this context is defined as the amount of time required for 50 percent hydrolysis to occur; in other words, for half the pesticide molecules in the solution to break down.)

Half Lives (in Weeks) of Insecticides at Various pH Levels

<u>Pesticide</u>	<u>pH Level</u>				
	4.5	5.0	6.0	7.0	8.0
Carbaryl	300.0	--	58.0	2.0	0.2
Trichlorfon	--	--	3.5	0.4	0.1
Chlorpyrifos	11.0	11.0	7.0	4.2	2.7
Diazinon	0.4	2.0	7.8	10.0	7.7
Malathion	18.0	--	5.8	1.7	0.5
Cypermethrin	99.0	--	69.0	63.0	5.0

These results are not as alarming as they might seem at first glance. Of the materials tested, only trichlorfon has a half-life short enough to reduce its activity during an actual spray operation. For example, this material breaks down in less than one day when mixed with water at pH 8.0.

Such laboratory results give a general indication of how stable a product is in sterile water. In the field, applicators must consider at least two other factors: the role of formulating agents in the pesticide and the role of microbes in the water used to mix the pesticide.

Solvents and other pesticide-formulation agents do affect hydrolysis rates; however, little work has been done to document this phenomenon directly. Researchers have studied how microbial processes in water affect pesticides.





In general, they have found that, although microbes do break down insecticides in water, the process is slow. Insecticides are definitely more stable in sterile water than in microbially active water.

The bottom line is that alkaline hydrolysis should not unduly concern pesticide applicators who are operating under typical conditions.

Pesticides--particularly organophosphate, carbamate, and pyrethroid insecticides--are susceptible. But, for most formulated materials, the breakdown is so slow at ordinary temperatures and pH levels that it has little impact on product performance.

The following steps should help users keep water pH from hindering pest control efforts:

- o Regularly test the water with a reliable pH meter. Water pH varies constantly, depending on the source, time of year, and even time of day.
- o Consult each pesticide label for mixing information and for precautions regarding alkaline water.
- o Always apply pesticides as soon as possible after mixing. Do not leave mixed pesticides in spray tanks for extended periods.
- o When mixing with alkaline water and using a pesticide that is sensitive to alkaline hydrolysis, adjust the water pH to neutral or slightly acidic before adding the pesticide.

For additional information on pH and pesticides

CONTACT: BEVERLY SPARKS (GA)

(912) 386-3424

#### FPM PERSONNEL CHANGES

Methods Application Group (MAG), Ft. Collins: Ross Pywell, Manager of the MAG Systems Development Program has departed. His replacement is Patrice Janiga. She previously assisted Ross as a computer specialist. Patrice started her Federal career with the National Park Service in 1978 as a Group Leader in the Youth Conservation Corps. In 1979, she joined the Forest Service as a co-op student through Virginia Tech. Patrice worked on the George Washington National Forest until 1984 when she was detailed to the Land Management Planning's detached unit in Fort Collins. In 1985, Patrice accepted a Computer Programmer position with the Office of Information Resources Management at the National Computer Center. While on this job she served with the Technical Hotline Service Center, Systems Software Support staff, and Database Management Applications Development Group. Patrice's professional interests include executive information systems, distributed database implementation, and artificial intelligence applications as they relate to USDA.

Forest Pest Management, Southeastern Region (R-8), Atlanta: Paul Mistretta has accepted an assignment, vice Max Williamson, on the Forest Pest Management Staff in the R-8 regional office. The position originally involved herbicide application technology transfer; however, Paul will be working much more with other pesticides and appeals related to their proposed use by the USDA FS.

For additional information on these position changes

CONTACT: BILL WHITE (CO)  
HARVEY TOKO (GA)

(303) 498-1775  
(404) 347-2961





## DRAFT INTERAGENCY AIRSPACE MANAGEMENT GUIDE

A National Airspace Committee, established to coordinate airspace management issues for the U.S. Department of Interior and the Forest Service, recently prepared a Draft Interagency Airspace Management Guide (DIAMG) that is available for review and comment. Copies of the DIAMG have been sent to each Region, Station, and Area pesticide coordinator by the USDA Forest Service National Airspace Representative, Bill Bulger (R-6).

In the past several years, there has been a marked increase in airspace conflicts between agency aircraft and other aircraft. As more and more aircraft take to the skies, as airspace management becomes more complex, and as military aircraft absorb more of the low-level airspace for training, effective systems to manage potential conflicts are needed.

The DIAMG Guide is intended to enhance the level of aviation safety by implementing a standard, uniform approach to airspace management in an increasingly complex and crowded airspace. To accomplish this, it is essential that all personnel involved in flight planning and operations read, understand, and implement the procedures contained in the DIAMG Guide. You are encouraged to obtain a copy and review it from the perspective of airspace management in your area of responsibility.

For additional information;

CONTACT: BILL BULGER (OR) (503) 326-2931

## FORESTRY RESEARCH: A MANDATE FOR CHANGE

The National Research Council (NRC) recently released an 84-page publication entitled **Forestry Research: A Mandate for Change**. According to the NRC press release,

"Forests are valuable in our daily lives, crucial to our nation's economy, and integral to the long-term health of the environment. Yet forestry research has been seriously underfunded, and the data generated under current research programs are insufficient to meet the diverse needs of our society. **Forestry Research** provides a research agenda that should yield the information needed to develop responsible policies for forest use and management. This consensus of forestry experts explores the diverse and competing concerns of the timber industry, recreational interests, and wildlife and environmental organizations; the gap between our need for information and the current output of the forestry research program; and areas of research requiring attention, such as biology of forest organisms, ecosystem function and management, human-forest interactions, wood as raw material, and international trade and competition."

Forest pests and pesticides are discussed in the publication in the context of integrated pest management (IPM) and biological pest control. The need for additional research emphasis in these areas is discussed.

For a copy of **Forestry Research: A Mandate for Change**

CONTACT: NATIONAL ACADEMY PRESS      2101 CONSTITUTION AV. NW,  
MAIN OFFICE      WASHINGTON, DC 20418



## PENDING PESTICIDE LEGISLATION

**California's Environmental Protection Act of 1990:** This legislation, also known as "Big Green," will be voted on by Californians in the upcoming November elections. The purpose of the "Big Green" initiative is ostensibly environmental protection; however, the proposed standards for California would establish standards for residue levels in food which could be more stringent than those existing under applicable Federal laws. This potential conflict between Federal and State standards could affect current U.S. obligations under the General Agreement on Tariffs and Trade.

According to **Pesticide and Toxic Chemical News**, opponents of "Big Green," including Agriculture Secretary Clayton Yeutter and U.S. Trade Representative Carla Hills, say that passage of this initiative in California could have an unfavorable ripple effect on food production worldwide. It would also effectively dictate U.S. environmental policy.

Other opponents of "Big Green" say it is an example of bad politics and a disregard for sound scientific reasoning. 'Big Green' seems to exploit fear and confusion in the public in order to gain a ban of a wide spectrum of essential chemicals that are important in the production of food and fibers."

Others say that "Big Green" takes "the existing, strict California pesticide standards and walks them over a plank into a sea of unreasonable and unworkable regulations which will disrupt the national and international marketplace."

Among the environmental issues covered by "Big Green" are:

- o **Global warming reduction measures:** Reduce greenhouse gases and ozone-depleting chemicals;
- o **Reforestation:** Requires developers to plant trees for every 500 square feet of developed space, prohibits clearcutting of old growth, and establishes a \$200 million dollar bond program for acquisition of ancient forests;
- o **Coastal water protection:** Includes major changes in water quality standards and establishes Statewide monitoring to assess water and sediment quality as established in the new standards;
- o **Pesticide Use:** Imposes major restrictions on the use of pesticides in food production.
- o **Oversight:** Creates an elected office of "Environmental Advocate."

The following excerpts are from the proposed initiative and R-5's evaluation of them:

**Section 3-26901:** The registration of any pesticide containing an active ingredient known to cause cancer or reproductive harm, which is registered for use on food or for which a tolerance exists as of the effective date of this Chapter, shall be cancelled and applicable tolerances revoked by January 1, 1996.





R-5 Opinion: No direct impact on forestry, but if food uses are banned, forestry uses would not be great enough to warrant maintaining the registrations.

Section 3-26904: No pesticide containing an inert ingredient known to cause cancer or reproductive harm may be registered, nor may a tolerance be established, for a new use on food. Existing registrations for use on food or a pesticide containing an inert ingredient known to cause cancer or reproductive harm shall be cancelled and applicable tolerances revoked within two years of the effective date of this Chapter.

R-5 Opinion: Could impact use of glyphosate (Roundup), triclopyr (Garlon 4), carbaryl (Sevin-4-Oil), 2,4-D, and Captan.

Section 3-26906: a) A pesticide residue may be permitted in food only if it is demonstrated that the pesticide residue presents no significant risk to human health, including the health of identifiable population groups (particularly infants and children) with special food consumption patterns. b) The term "no significant risk" means: (1) For pesticides that are known carcinogens or highly hazardous, the level at which the residue will not cause or contribute to a risk of human cancer in the exposed population which exceeds a rate of one in a million, utilizing the most conservative risk assessment model that is generally accepted to be scientifically valid.

R-5 Opinion: Follows same thinking used in Forest Service Records of Decision.

For additional information on "Big Green"

CONTACT: JOHN NEISESS

(415) 705-2660

Aerial Spraying Prohibition: In a related piece of proposed Federal legislation, California Congressman Bates recently introduced a bill (H.R. 5188) "to prohibit the spraying of toxic pesticides over densely populated areas." The text of the proposed bill follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that in the administration of the Federal Insecticide, Fungicide, and Rodenticide Act, the Administrator of the Environmental Protection Agency shall, not later than 6 months after the date of the enactment of this Act, classify under section 8(d) of such Act toxic pesticides for use which prohibits the aerial spraying of the toxic pesticides over areas which have a population density greater than 1,000 persons per square mile."

For additional information on this proposed legislation

CONTACT: WO LEGISLATIVE AFFAIRS

FTS 447-7531





## WESTERN SPRUCE BUDWORM SUPPRESSION ON THE YAKIMA INDIAN RESERVATION

The USDA Forest Service and the Yakima Indians recently cooperated on an effort to control western spruce budworm (WSBW) within the boundaries of the Yakima Reservation. A seminar about the suppression project was held in Washington, D.C. on August 7. The following are excerpts from that presentation:

The Yakima Indian Reservation in central Washington contains approximately 650,000 acres of forests. These forests are vital to the well-being of the Yakima Nation. Timber harvesting generates approximately \$20 million per year for the Yakima peoples. It is the largest source of tribal income. The forests play a vital role in the culture of the Yakimas. They are actively managed by the Tribe and the Bureau of Indian Affairs for a variety of outputs and values, including lumber, wildlife, foods, medicines, and religious and cultural experiences.

In 1987, during the annual forest pest damage survey conducted jointly by the Forest Pest Management (FPM) staff of the Pacific Northwest Region and the Washington State Department of Natural Resources, an outbreak of WSBW was detected. In 1989, WSBW defoliation increased dramatically on the Yakima Reservation. The Yakima Agency, Forestry Branch, Bureau of Indian Affairs, requested that FPM do a biological evaluation to help determine if suppression should be undertaken. As a result of this evaluation, FPM predicted that 1990 budworm populations would exceed thresholds historically used to warrant insecticidal intervention.

The Yakima Tribal Council passed a resolution asking the Forest Service and BIA to control the outbreak by aerially applying the biological insecticide Bacillus thuringiensis. The product used was the water-based Thuricide 48LV.

The BIA prepared a site-specific Environmental Assessment tiered to the Forest Service programmatic Environmental Impact Statement for management of the WSBW in Oregon and Washington. The Yakima BIA had no previous experience in conducting an aerial pesticide application project, so the Forest Service planned and carried out the project with cooperation from the BIA and the Tribe. The Yakima Nation hired 17 tribal members to work on the project. A total of 55 government employees were involved. In addition, the contractor had 20 people on site.

The Yakima Indian Reservation WSBW suppression project initiated spraying on June 20. Three fixed-wing Air Tractor 400's, capable of spraying 40 acres per minute and two Bell 204 helicopters capable of spraying 21 acres per minute were used. The fixed wings always flew in formation, whereas the helicopters typically sprayed singly in separate blocks. Spraying was completed on June 29. A total of 70,827 acres were sprayed. About 23,754 gallons of insecticide were used. The project ended with excellent results. Population reduction of WSBW was about 96.5 percent. Total cost of the project was \$1,087,544.00 or about \$15.35 per acre.

For additional information

CONTACT: JIM HADFIELD (OR)

(503) 326-2727



CONTINUING EDUCATION REQUIRED FOR PESTICIDE APPLICATOR LICENSE/CERTIFICATE  
HOLDERS IN CALIFORNIA

Effective July 4, 1990 the Director of the California Department of Food and Agriculture adopted changes to Titles 3 and 26 of the California Code of Regulations that require all certified pesticide applicators to obtain 20 hours (over a period of two years) of accredited continuing education hours. This should include four hours pertaining to pesticide laws and regulations. For those who's certificates expire December, 1990, no credit hours will be required to renew. Those with certificates expiring in December, 1991, will be required to have 10 hours of continuing education to renew. After this phase-in period, all renewals will require 20 hours over a two-year period.

To obtain continuing education credits in California, an individual must sign in with name and correct license/certificate number at meetings, workshops, and seminars that are accredited. The annual meeting and field meetings of the California Forest Pest Council, FPM's IPM training courses, the Vertebrate Pest Conference, Forest Vegetation Management Conference, Weed Conference, and Pesticide Applicators Professional Association (PAPA) each sponsor seminars and workshops. They provide examples of the kinds of accredited training available and applicable for continuing education credit. Any FS meeting or workshop where information on pesticides will be presented can apply for credits through the local Regional Accreditation Committee by sending an application form and proposed agenda. Application forms are available from each Regional Accreditation Committee contact person, the California Department of Food and Agriculture (CDFA), all county agricultural commissioner offices, and the University of California Cooperative Extension Offices (Farm and Home Advisor).

Completed, quadruplicate-copy application forms and a copy of the agenda must be submitted to the Regional Accreditation Committee representing the county where the instruction is to be given. Applications and agendas for meetings held in adjacent states should be submitted to the Regional Accreditation Committee which is closest to the State. Meetings held in non-adjacent States and/or foreign countries should be submit applications and agendas to CDFA. The application must be submitted to the appropriate committee at least two weeks prior to the start of the course/meeting.

For additional information or a copy of the appropriate application form

CONTACT: JOHN BORRECCO

(415) 705-2660





## NON-CANCER RISK ASSESSMENT

The Society for Risk Analysis recently announced its plans to sponsor a workshop on "Critical Issues in Non-Cancer Risk Assessment: Current Practices and Future Promises." The workshop will be held October 4, 1990 in the U.S. Environmental Protection Agency Auditorium, Research Triangle Park, North Carolina. The registration fee is \$55.00.

The program for this workshop will include:

- o EPA's Non-Cancer Risk Assessment Guidelines;
- o Alternative Approaches to Non-Cancer Risk Assessment;
- o Statistical Approaches to Dose-Response Modeling;
- o The Role of Pharmacokinetic Models in Non-Cancer Risk Assessment;
- o Developing Biologically-based Dose/Response Models;
- o Risk Assessment for Developmental Endpoints, and
- o Risk Assessment for Neurotoxicity.

For information on attending the workshop

CONTACT: HARVEY RICHMOND

(919) 541-5271

## NOTES FROM SCIENCE DIGEST NEWS (AUGUST 11, 1990)

"Cultivating Weeds for Pest Control:" A weed that commonly sprouts between rows of corn in Mexico, lowering crop yields if left unchecked, actually enhances crop quality if allowed to survive at moderate levels, according to research performed in southeastern Mexico.

Traditional farmers in Mexico have long permitted Bidens pilosa to co-exist with their corn, cutting the weeds back about once a month. Francisco J. Rosado-May and his colleagues at the University of California, Santa Cruz, sought a scientific rationale for this practice. They found that the weed's roots secrete compounds lethal to corn-destroying fungi and nematodes. If trimmed 15 days after crop plants emerge, and then every 30 days until harvest, the weeds control these pests without significantly stealing soil nutrients from the corn.

In the United States, the team obtained similar results with a corn-associated weed called Brassica kaber. "You don't have to plant the weed--it's already there. All you have to do is manage it," Rosado-May says.

END





SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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NEW CONIFER PESTS PUBLICATION AVAILABLE

The USDA Forest Service, Southwestern Region (R-3) recently released a new publication entitled "Conifer Pests in New Mexico." The 48-page brochure covers both insects and diseases. Insect pests covered include: Pinyon needle scale, pine needle scale, pinyon spindle gall midge, needle miners, tiger moth, Douglas-fir tussock moth, western spruce budworm, conifer sawflies and aphids, spider mites, pine tip moths, twig beetles, bark beetles, etc. Diseases covered include: Mistletoes, broom rusts, branch and shoot diebacks, root rots, and needle diseases.

Pest control recommendations are provided in general terms in this brochure; however, specific pesticide recommendations are left to County/State agricultural extension agents.

For a copy of this new publication

CONTACT: DOUG PARKER (NM)

(505) 842-3281

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.



# 1990 PRELIMINARY GYPSY MOTH TREATMENTS

As indicated in "Short Subjects..." Issue No. 90-11 (July, 6), the 1990 gypsy moth suppression/eradication efforts were completed at the end of June. Several readers have requested more specific information on where the treatments took place. The following tabulation provides that information.

Any questions may be directed to WO-FPM

**CONTACT: TOM HOFACKER (DC) (202) 453-9600**

State / Site	Dimilin	Bt	Other*	Total
<b>DELAWARE</b>				
Cooperative Suppression	42,462	15,256	0	57,718
<b>IDAHO (Co-op Eradication)</b>				
Coeur d'Alene/Sandpoint	0	1,060 (3X)	0	1,060 (3X)
<b>MARYLAND</b>				
Cooperative Suppression	80,823	104,851	0	185,674
Aberdeen Proving Ground	0	8,000 (2X)	0	8,000 (2X)
Adelphi Laboratory	70	30	0	100
Annapolis Naval Reservation	0	183 (2X)	0	183 (2X)
C&O Canal & GW Parkway	0	986	0	986
Fort Meade	0	6,300	0	6,300
Greenbelt ACE	0	247 (2X)	0	247 (2X)
Greenbelt & BW Parkway	0	1,108 (2X)	0	1,108 (2X)
NASA-Goddard	0	1,197 (2X)	0	1,197 (2X)
White Oak Naval Center	226	40	0	266
Pautuxent Wildlife Center	0	3,550 (2X)	0	3,550 (2X)
USDA-ARS Research Center	0	2,943 (2X)	0	2,943 (2X)
Youghiogheny Lake	0	16	0	16
<b>MICHIGAN</b>				
Cooperative Suppression	0	143,240	0	143,240
Huron-Manistee National Forest	0	784	0	784
<b>NEW JERSEY</b>				
Co-op Suppression (NJ Ag)	0	92,997	0	92,997
Co-op Suppression (NJ Forestry)	575	7,830	0	8,405
<b>NEW YORK</b>				
Seneca Indian Nation	0	3,960	0	3,960
<b>NORTH CAROLINA (co-op eradication)</b>				
Bert, Halifax, Northam County	0	4,200 (2X)	0	4,200 (2X)

(CONTINUED ON NEXT PAGE)

Bt = Bacillus thuringiensis

Dimilin = diflubenzuron

Other = GYPCHEK and disparlure





<b>PENNSYLVANIA</b>				
Cooperative Suppression	117,888	274,232	0	392,120
Allegheny National Forest	29,684	12,441	0	42,125
Bureau of Prisons	127	0	0	127
Conemaugh Lake	0	150	0	150
Cowanesque Dam	0	102	0	102
Crooked Creek Lake	0	324	0	324
Fort Necessity Park	0	400 (2X)	0	400 (2X)
Gettysburg National Battlefield	0	56 (2X)	0	56 (2X)
Loyalhanna Lake	0	42	0	42
Mahoning Creek Lake	0	62	0	62
Raystown Lake	0	80	0	80
Youghiogheny Lake	0	164	0	164
<b>TENNESSEE (Co-op Eradication)</b>				
Sequatchie County	0	0	200	200
<b>UTAH (Co-op Eradication)</b>				
Wasatch Front		20,064 (3X)	0	20,064 (3X)
<b>VERMONT</b>				
Cooperative Suppression	0	8,050	0	8,050
Green Mountain National Forest	0	3,202	0	3,202
<b>VIRGINIA</b>				
Cooperative Suppression	92,999	34,616	0	127,615
AIPM Project	28,855	61,309	1,079 (2X)	91,243
Arlington National Cemetery	435	0	0	435
Dulles Airport	1,600	0	0	1,600
Fort Belvoir	137	0	0	137
Fredricksburg/Spotsylvania National Battlefield	0	230	0	230
GW Parkway	0	951 (2X)	0	951 (2X)
Manassas National Battlefield	0	186 (2X)	0	186 (2X)
Prince William Forest Park	0	654 (2X)	168 (2X)	822 (2X)
Quantico Marine Base	3,314	1,772	0	5,086
Shenandoah National Park	1429	802	86 (2X)	2,317
Smithsonian Zoological Park	100	0	0	100
Vint Hill Farms	185	0	0	185
Warrenton Training Center	371	0	0	371
<b>WASHINGTON, DC</b>				
National Arboretum	0	187 (2X)	0	187 (2X)
National Capital Parks	0	261 (2X)	0	261 (2X)
<b>WEST VIRGINIA</b>				
Cooperative Suppression	104,847	56,551	481 (2X)	161,879
AIPM Project	105,696	68,924	1,900 (2X)	176,520
George Washington NF	575	3,250	125 (2X)	3,950
Monongahela NF	279	8,122	344 (2X)	8,745
<b>GRAND TOTAL</b>	<b>612,677</b>	<b>955,962</b>	<b>4,383</b>	<b>1,573,020</b>

\* (\_X) indicates the number of applications in a multiple application project.





### LYME DISEASE UPDATE

Last year, 7,400 cases of Lyme disease were reported to the U.S. Centers for Disease Control. High concentrations of the disease were reported in New York, Minnesota, and Wisconsin. "Lyme disease is the most frequently acquired of all vector-borne diseases in the continental U.S.," says Dr. Joseph F. Piesman in the Ft. Collins office of the Center for Disease Control.

First identified 15 years ago, Lyme disease has spread to forty-three States. Rhone-Poulenc Ag Company recently sponsored a symposium on Lyme disease. They are the manufacturers of Chipco Sevimol<sup>R</sup> and Sevin<sup>R</sup> brands of carbaryl insecticides, both of which have proven effective in deer tick control. According to Rhone-Poulenc, four tests conducted in New Jersey, Connecticut and New York using liquid applications of Chipco Sevimol<sup>R</sup> and granular Sevin<sup>R</sup> brand carbaryl insecticide showed effective control of ticks.

Damminix<sup>R</sup>, made by Ecohealth, Inc. has also been effective as a more surgical approach to controlling ticks. Cotton balls saturated with permethrin are placed around risk areas in cardboard tubes. Field mice then take the cotton for use as nesting material. The ticks feeding on the mice are controlled after the mice bring the cotton to the nest. The mice remain unaffected.

Dr. Andrew Spielman of the Harvard School of Public Health and Dr. Thomas J. Daniels of New York Medical College listed some common tick carriers: white footed mice, dogs, cats, raccoons, and squirrels.

Typical symptoms of the disease are a bull's-eye shaped rash, headaches, fever, chills, nausea, fatigue, muscle and joint pain, and swollen glands. Symptoms can worsen to include arthritis, nerve or heart disorders, meningitis, encephalitis and facial paralysis.

Brochures on Lyme disease are available

**CONTACT: LYME DISEASE CENTER**  
New York Medical College  
Valhalla, NY 10595

### CRAFTS PROGRAM UPDATE

Oregon State University's Department of Forest Science recently released their 1989-90 Coordinated Research On Alternative Forestry Treatments & Systems (CRAFTS) Annual Report. It describes their tenth year of activity in forest vegetation management research and technology transfer. Accomplishments of this past year include completion of VEGPRO, a computer software package designed to aid prescription-writing in vegetation management, and the initiation of a research program on herbaceous vegetation in young conifer stands.

If you would like to discuss any aspect of the CRAFTS program

**CONTACT: TIM HARRINGTON (OR) (503) 737-2244**



### BIOPESTICIDES IN THE 90'S

The U.S. Environmental Protection Agency (EPA) and the Industrial Biotechnology Association (IBA) are jointly sponsoring a biopesticide registration workshop this fall. The one and one-half day session will be held on September 12-13 at The Washington Court on Capital Hill, Washington, D.C.

Topics to be covered include:

- \* Overview of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) as it pertains to biopesticides.
- \* Organization and Roles within EPA's Office of Pesticide.
- \* Commercial concerns for Product Development.
- \* Data Requirements: Section 158 of FIFRA and Subdivision M.
- \* Good Laboratory Practices (GLPs).
- \* Pre-registration Mtgs.--How to Maximize Interaction with EPA.
- \* Case Study of Product Development: Bacillus thuringiensis.
- \* Field Test Notifications - How to Prepare an Adequate Submission.
- \* Confidential Business Information (CBI) Policy and Procedures.
- \* Tolerances and Fees - How to Submit, Exemptions.
- \* USDA/EPA Requirements - Shipping Permits, Plant Pest Status.
- \* Amendments to Experimental-Use Permits (EUPs) or Labels - Reformulations, New Crop Use

For more information about the workshop

CONTACT: ALAN GOLHAMMER (DC) (202) 857-0244





## WOOD PROTECTION

The Naval Facilities Engineering Command recently issued a publication on "Wood Protection." According to the Navy, "Wood is a readily available, inexpensive natural resource that is both a versatile and useful construction material. The usefulness of wood is increased when it is protected against deteriorating agents by pressure treatment with preservatives."

Their manual provides information which will ensure that personnel working with wood are able to specify and receive preservative-treated wood products. Specifically their manual covers wood as a construction material, wood identification, wood deterioration, wood preservation, inspection of treated wood products, maintenance of treated wood products, and remedial control.

For additional information about this manual

**CONTACT: NAVAL FACILITIES ENGINEERING COMMAND**  
**200 Stovall Street**  
**Alexandria, VA 22332-2300**

## BIOLOGICAL OR CHEMICAL: WHAT'S IN A NAME?

What makes a beer or an ice cream "lite?" How is coffee decaffeinated "naturally?" And what on earth does "wholesome" mean on a package of cream-filled snack cakes?

The English language bulges with terminology that has become vague or even totally meaningless through misuse. Pesticides serve as a perfect example. Just what makes one "biological" and another "chemical." In the end, all pesticides are made up of chemicals. Differences lay in how they are produced and how they act on pests.

It seems that "biological" has come to mean any pesticide that is, or once was, a living substance, or is produced by biological means such as by plants or microbial organisms. "Chemical" is most often used to refer to any material that is produced by a non-biological process from non-living substances. Unfortunately, "biological" and "chemical" are often equated with "safe" and "dangerous." This is not necessarily true all the time.

As it happens, the most common biological pesticides (e.g., B.t.) tend to be highly specific toward insects and quite safe to humans and the environment. But the toxin produced by B.t. is none-the-less a chemical. Consider too that one of the most potent poisons known to humankind, botulism, is similarly produced by a bacterium (Clostridium botulinum).

On the other hand, what we tend to call "chemical" pesticides includes some highly dangerous compounds, but others that are quite specific to insects and of very low human or environmental hazard. The two materials used by virtually all large-scale gypsy moth control programs today are B.t., a "biological", and diflubenzuron (Dimilin<sup>®</sup>) a "chemical" insect growth regulator. Though neither is perfect, both rank low in human and environmental hazards when compared with other pesticides.

This article was modified from one that appeared in the **Gypsy Moth Management Newsletter**. For additional information

**CONTACT: NATIONAL GYPSY MOTH MANAGEMENT GROUP, INC. (717) 789-3434**

**END**





SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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PEST SUPPRESSION UPDATES

Gypsy Moth: Nearly 1.6 million acres were treated for gypsy moth in the U.S. in 1990. The use of *Bacillus thuringiensis* (58.4%) and diflubenzuron (40.8%) was about equal. A total of 3,514 acres were treated with the nucleopolyhedrosis virus GYPCHK. About 660 acres of this was from product produced by the agency contractor, ESPRO, Inc.

Forest Tent Caterpillar: Approximately 17,000 acres of the Menominee Indian Reservation (WI) were treated with diflubenzuron to control forest tent caterpillars.

Western Spruce Budworm: Bt was the pesticide of choice on 67,653 acres of the Yakima Indian Reservation (WA) where WSBW is problematic in 1990.

Mormon Crickets: Large infestations of Mormon crickets are threatening rangelands in Utah, Idaho, and Nevada. To date, crickets have infested more than 100,000 acres. Carbaryl bran bait is being used by the Animal and Plant Health Inspection Service (APHIS) to curb the spread of this pest.

For more information on any of these pest management efforts

**CONTACT: TOM HOFACKER (WO) (202) 453-9600**

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.



PREDICTING PESTICIDE DEPOSITION IN SEED ORCHARDS

Forest Pest Management, the Missoula Technology Development Center, the Pacific Northwest Forest and Range Experiment Station, and Continuum Dynamics, Inc. recently cooperated with the Oakridge District, Willamette National Forest, OR to evaluate aerial pesticide applications at the Heather Douglas-fir seed orchards. Spray deposit data collected on cards and strings during the 1989 project were compared to FSCBG spray model predictions of canopy penetration and deposition. Results of the statistical comparison revealed that the model predicted canopy penetration and deposition within an average of 8.3 percent. This further supports the utility of FSCBG in planning safe and efficient spray operations.

For copies of the report - "FSCBG Modeling Comparisons with the Heather Seed Orchard Deposition Data"

CONTACT: JACK BARRY (CA) (916) 758-4600

APHIS RELEASES DEIS ON ADC

On July 2, the Animal and Plant Health Inspection Service (APHIS) released a Draft Environmental Impact Statement (DEIS) on Animal Damage Control (ADC). APHIS conducts the ADC program for USDA in all 50 states. The program uses an integrated pest management approach to reduce wildlife damage to agriculture, natural resources, facilities and structures, and for the safeguarding of public health and safety. The DEIS examines 11 alternatives and provides detailed analyses of the Current Program, No Action, and Compensation Alternatives. The analyses focus on the wildlife species affected, losses associated with wildlife damage, societal values or attitudes, and impacts on the physical environment.

Comments on the DEIS may be submitted in writing or presented orally at the following public meetings:

August 6, 1990	August 8, 1990	August 10, 1990
10:00 a.m.	10:00 a.m.	10:00 a.m.
Room: Sierra Mariposa	Room: Ashley Hall	Room: Jefferson Auditorium
Holiday Inn-North East	Holiday Inn-Airport	U.S. Dept. of Agriculture
5321 Date Avenue	11832 Plaza Circle	14th & Independence Ave.
Sacramento, CA	Kansas City, MO	Washington, DC

Comments on the DEIS should be as specific as possible including suggested changes and information sources. All comments received by August 31 will be considered in preparing the final EIS.

A copy of the final EIS will be sent to each person providing comments on the DEIS. Copies will also be provided to others on request.

For additional information and copies of the draft or final EIS

CONTACT: GARY E. LARSON (301) 436-8281





VEGETATION MANAGEMENT APPEALS

REGION 6 and 8: Progress is being made by the Forest Pest Management staff in coordinating the 51 vegetation management appeals currently in the Washington Office. Decision letters for the Region 6 and the Region 8 Coastal Plains/Piedmont appeals have been signed by S&PF Deputy Chief Al West. The letters informed them that the reviewing officer affirms the Regional Forester's decision in each case. The letters also indicate that the Chief is lifting the deferral on the aerial application of herbicides for Region 6 and the Region 8 Coastal Plains/Piedmont area.

REGION 5: FPM has completed the preparation of responses to all 22 appeals filed on the FEIS. They have been forwarded to the Office of General Counsel (OGC) for review. OGC has been working diligently to complete the legal review of these appeals.

Estimated completion and signoff date on the R-5 appeals: July 31, 1990.

REGION 6: The Record for the nine appeals has been closed with the signing of the decision letters mentioned above.

Completed and signed : June 21, 1990.

REGION 8:A. Coastal Plains/Piedmont FEIS:

Reviewing Officer has signed the completed decision letters.

Completed and signed: June 20, 1990.

B. Appalachian Mountain FEIS:

1. Decision letters for 8 appeals on the FEIS for Vegetation Management in the Appalachian Mountains have been completed and forwarded to OGC for legal review.

2. Estimated completion and signoff date: August 17, 1990.

C. Ozark/Quachita Mountain FEIS:

1. The appeal period for the Regional Forester's decision to the FEIS for Vegetation Management on Ozark/Quachita Mountain Forests ended on June 4, 1990.

2. Seven appeals were filed by various individuals and organizations. Five of the appellants have requested a stay on the use of herbicides in the area covered by the FEIS.

3. Estimated completion and signoff date: November 13, 1990.

For additional information

CONTACT: JESUS COTA (WO) (202) 453-9600





### SOIL FUMIGATION EFFECTS ON CONIFER SEEDLINGS

A report entitled "Effects of Soil Fumigation on Conifer Seedling Production at the USDA Forest Service Nursery, Couer d'Alene, Idaho", is available from the Northern Region. The report summarizes the effects of soil fumigation with dazomet (granular) and methyl bromide plus chloropicrin on soil pathogen populations and disease occurrence on, and growth of, bareroot western white pine, Douglas-fir, and western larch seedlings. Evaluations were done from 1986-1988. Both fumigants initially eliminated soil pathogens. However, Fusarium and Pythium spp. reinvaded dazomet-treated soil during the 2-year crop cycle, although their numbers were not high. Little reinvasion occurred in soil treated with methyl bromide/chloropicrin. The incidence of diseases of seedlings grown in both fumigated and non-fumigated soil was low. However, greater amounts of root infection by Fusarium spp. on seedlings occurred in non-fumigated soil. Seedlings grown in fumigated soil were often taller than those grown in non-fumigated soil. Implications of these findings on bareroot seedling production at the nursery are also discussed in the report.

For a copy of R-1 report 90-11

CONTACT: R. L. JAMES (ID) (203) 765-7421

### BEETLE BOMBS

Entomologists have long known that the bombardier beetle has the capability to hose down its enemies with a searing, blister-raising spray. The spray is emitted from a nozzle located at the tip of its abdomen. It can swivel around like a turret. Thomas Eisner of Cornell University and his colleagues report in the current issue of the journal Science that instead of just spraying its foes, the beetle produces a rapid-fire series of tiny explosions or entomological bombs.

Basically, Eisner said, the bombardier beetle is like a binary weapon. It takes hydrogen peroxide and an irritant (a benzoquinone) and mixes them together with special enzymes in a reaction chamber located in the insect's hind section, where "for all intents and purposes, you get a series of chemical explosions".

Eisner thought that the beetle probably issued a series of micro-explosions, but researchers could not prove it until they visited the lab of Harold "Doc" Edgerton of Massachusetts Institute of Technology, whose superfast strobe lights were capable of firing several thousand times a second. By rigging up the cameras and strobes and pinching the beetle's leg, the scientists captured the bombardier firing at more than 500 pulses a second.

"There are great advantages to firing in pulses," Eisner said. "Just like it's better to have a machinegun spitting out bullets than blowing up a barrel of nails."



U.S. PEST MANAGERS VISIT CANADA'S FOREST PEST MANAGEMENT INSTITUTE

A USDA Forest Service contingent consisting of Forest Pest Management (FPM) Director, Jim Space; Max Ollieu, Assistant Director, FPM; Dick Smith, Acting Director, Forest Insect and Disease Research, Washington Office; and Charlie Hatch, Entomologist, Northeast Area, FPM, State and Private Forestry recently visited Forestry Canada's Forest Pest Management Institute, Sault Ste. Marie, Ontario. Errol Caldwell, Director, Pest Management Applications & Environmental Research; David Tyrrell, Acting Director, Biorational Control Agents Program; and John Cunningham, Project Leader for Viral Pathogens, hosted the meeting.

The agenda for the session included a visit to NAPIAP-funded study sites in both Michigan (Lake Superior State University) and Ontario, where testing of effects of glyphosate, triclopyr, and Bacillus thuringensis on non-target aquatic organisms was being conducted. The FPMI fixed-wing aircraft and support equipment used in treating study plots were observed at Thessalon and discussions were held with the pilot, Art Robinson. A quick tour of FPMI was also provided.

Discussions with FPMI personnel included regulatory updates regarding pesticides on both sides of the border, potential NAPIAP studies, Canadian participation in the North American Forestry Commission, and other cooperative opportunities such as involvement in the pesticide steering committees, Marana training, and aerial application model training.

The U.S. pest managers continue to be impressed with the quality of the staff work underway and the facilities at FPMI. Numerous opportunities were identified for cooperative efforts between FPM and FPMI. The challenge will be in following up on as many of those opportunities as possible.

For additional information

CONTACT: MAX OLLIEU (WO) (202) 453-9600

NEW PEST REPELLENT AVAILABLE

A new pest repellent has been developed by the US Army Medical Research and Development Command and 3M Company. The new product replaces the previous standard issue repellent, which proved unsatisfactory.

The new repellent is designed for personnel who need effective long lasting protection against: mosquitos, ticks (which cause Rocky Mountain Spotted Fever and Lyme Disease), biting flies, fleas and chiggers.

The repellent is advertised to:

- \* last over 12 hours;
- \* contain lower levels of "Deet" - only 35%;
- \* have less odor;
- \* be 95% effective when properly applied; and
- \* be less harmful to plastics than its predecessors.

For additional information

CONTACT: WENDY BRANDT (MN) (612) 736-2644





## DUPONT PLANS TO MARKET BIO-INSECTICIDE

Du Pont plans to market Novo Nordisk's biological insecticide Bacillus thuringiensis, Biobit, through its agricultural products group. The agreement between DuPont and the Danish Bioinsecticides producer will allow DuPont to distribute and market Biobit throughout the U.S. for insect control on fruit, vegetable, cotton, soybean, and alfalfa crops in wettable powder and flowable concentrate under the Novo Nordisk brand name. Novo Nordisk retains the right to directly market its products for application in forestry and public health markets. Du Pont says Biobit is highly effective when applied with its Lannate<sup>R</sup>, Asana XL<sup>R</sup>, and Vydate L<sup>R</sup> chemical insecticides as part of an integrated pest management program.

CONTACT: TEMPLE BOWEN

(203) 790-2600

## ETHEPHON UPDATE

Ethephon, a plant growth regulator marketed as Florel<sup>R</sup>, was recently used on two California State Forests. The purpose of the use of ethephon was to control dwarf mistletoe on Jeffrey and ponderosa pines.

As a result of field trials in 1988 and 1989, ethephon appears to be a useful chemical if expectations are tempered by knowledgeable use of the material. Practical use of ethephon is limited to reducing disease spread among high value hosts. Ethephon is not useful in forest-wide applications against dwarf mistletoe because it usually does not kill the parasite and, therefore, large area applications must be repeated at continued expense. Trees considered for treatment should be in good health (despite mistletoe presence). As ethephon does not kill treated dwarf mistletoe plants, treated infestations will continue to adversely affect host vigor.

Timing of treatment (time of year), optimal weather conditions (no rain or wind), and complete plant coverage is important for best results. Frequency of application criteria need to be developed for the species and site.

Ethephon applications should only be made by licensed applicators and in accordance with special local needs (24c) labeling.

A summary report entitled, "Removal of Western Dwarf Mistletoe Shoots on Jeffrey and Ponderosa Pines Using Ethephon (Florel<sup>R</sup>) on Two California State Forests," is available.

CONTACT: SUSAN FRANKEL (CA) (415) 705-2651

## PESTICIDE COORDINATORS LIST -- AN UPDATE

In an earlier issue of "Short Subjects...," a list of Forest Service pesticide coordinators was provided. There were several errors and omissions. They are corrected by the following list. Please discard the former and replace with this version.

CONTACT: DENNIS HAMEL (WO) (202) 453-9600

HOPE YOU HAD A HAPPY 4TH OF JULY!





# FOREST SERVICE PESTICIDE COORDINATORS

<u>REGION</u>	<u>NAME</u>	<u>FTS PHONE NO.</u>	<u>ADDRESS</u>	<u>DG ADDRESS</u>
1	Ed Monnig	585-3134	Federal Building P.O. Box 7669 Missoula, MT. 59801	:R01A
2	Curtis O'Neil	776-9553	P.O. Box 25127 Lakewood, CO 80225	:R02A
3	Vacant (Doug Parker)	476-3280	Federal Building 517 Gold Ave. Albuquerque, NM 87102	:R03A
4	Garth Baxter	586-5258	Federal Building 324 25th St. Ogden, Utah, 84401	:R04A
5	John Borrecco	465-2873	630 Sansome St. San Francisco, CA 94111	:R05A
6	Gary Smith Fay Shon	423-2727	P.O. Box 3623 Portland, OR 97208	:6/PNW
8	John W. Taylor	257-2718	1720 Peachtree, NW Atlanta, GA 30367	:R08A
9	Larry Yarger	362-1899	310 W. Wisconsin Milwaukee, WI 53203	:R09A
10	Ed Holsten	907-271-2575	201 E. 9th Ave. Suite 201 Anchorage, AK 99501	:R10F04A
NA	Charles Hatch	489-4120	5 Radnor Corp. Ctr. Suite 200 100 Matsonford Rd. Radnor, PA 19087	:S24A
<u>DAVIS</u>	Jack Barry Pat Skyler	460-1715	2121 C 2nd St. Davis, CA 95616	:SCS06
<u>WO</u>	Max Ollieu Larry Gross Jesus Cota Zdenka Horakova Dennis Hamel Shelly Witt	453-9600    453-9280	Regular letters: USDA Forest Service, FPM, AB-2S P.O. Box 96090 Washington, D.C. 20090-6090  In-person delivery (e.g. UPS) 201 14th Street S.W. Washington, D.C. 20250	



FOREST SERVICE PESTICIDE COORDINATORS (CONT.)

STATIONS

INT	Lynn Rasmussen	586-5393	Forestry Sciences 507 25th St. Ogden, Ut 84401	:S22A
NC	Dan Netzer	715-362-7474	Forestry Sciences Box 898 Rhineland, WI 54501	:R09F06A
NE	Jack Barger	975-9206..	Forestry Science 359 Main Rd. Delaware, OH 43015	:S24L05A
PNW	Gary Daterman	420-4331	Forestry Sciences 3200 Jefferson Way Corvallis, OR 97331	:S26L05A
PSW	Pat Shea	449-3217	P.O. Box 245 Berkeley, CA 94704	:S27A
RM	John Schmid	323-1100	240 W. Prospect Ft. Collins, CO 80526-2098	:S28A
SE	Gordon Lewis	672-0637	200 Weaver Blvd. P.O. Box 2680 Asheville, NC 28802	:S29A
SO	James Bell	682-6712	Post Office Bldg. 701 Loyola Ave. New Orleans, LA 70113	:S30A
FPL	Tom Jacobson	364-5723	Gifford Pinchot Dr. Madison, WI 53705-2398	:S32A

END





SHORT SUBJECTS  
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PEST SUPPRESSION UPDATE

Gypsy Moth (GM). The GM treatment program for 1990 is about 98% complete. To date a total of 1,573,735 acres have been sprayed in the East. Gypsy moth eradication in Utah (Wasatch Front) continues with only about 66% of the program complete.

Western Spruce Budworm (WSBW). The WSBW project planned for the Yakima Indian Reservation (WA) has been delayed due to persistent rains and windy weather.

For additional information on the 1990 treatment program

CONTACT: TOM HOFACKER (WO)

(202) 453-9600

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### DOUGLAS-FIR TUSSOCK MOTH TRAPS

The Forest Pest Management/Methods Application Group (FPM/MAG) is currently assisting Regions 1 through 6 and the States within those regions with a continuing evaluation of the early warning detection system developed by the Pacific Northwest Research Station (PNW) under the Douglas-Fir Tussock Moth Expanded Research and Development Program.

FPM/MAG contracts each year with the Foothills Gateway Rehabilitation Center in Fort Collins, CO, for the manufacture of Douglas-fir tussock moth pheromone traps. These traps help determine outbreak potential by capturing male tussock moths during the mating season. The number of moths caught is an indication of the number of larvae that will be present the following spring and the subsequent potential for defoliation. FPM/MAG sends a letter to the FPM Directors in Regions 1-6 in January asking their FPM staffs to contact the cooperating States in the region and submit a consolidated order for pheromone traps to MAG. MAG then sends out traps, ties, pheromone, and data entry forms by June to the Regions and States.

After the traps are placed in the field in late summer and retrieved in the fall, the captured male tussock moths are counted and recorded on a field data entry form. From this form, regional FPM personnel enter the data, creating a computerized data file which is then transmitted to MAG via DG, floppy disk, or other computerized file transfer methods. At MAG, the data is consolidated. Should a future outbreak of DFTM occur, the data would be used to analyze control needs. If control is needed, there is a possibility that TM BioControl (the FS-registered nucleopolyhedrosis virus) would be used.

For additional information on this project

**CONTACT: SALLY SCRIVNER (CO)**

**(303) 498-1788**

### EPA DRAFTS A SAFER PESTICIDES POLICY

A draft of a safer pesticides policy proposed by the EPA lists "reluctantly retained" pesticides and uses and calls for information on alternatives to them.

The following list of "reluctantly registered or retained uses of risky pesticides" from the draft proposed policy were selected either because there were no alternatives or because available alternatives were "not efficacious or cost-effective."

The draft said, "The agency expresses its continuing concern about the listed registrations. It discourages their use when not essential, and encourages the development and registration of substitute, safer pesticides or other pest management practices." The list below, denotes the chemicals of concern; their uses, the reasons for concern; and justification for continued use:

Dimethoate -- grapes, citrus, tomato, broccoli, beans, ornamentals; oncogenicity, mutagenicity, fetotoxicity and reproductive effects; limited efficacy of cost-effective alternatives.

Ethylene dibromide -- exported citrus, oncogenicity, mutagenicity and reproductive effects; lack of alternatives.



EPA Drafts a Safer Pesticides Policy (cont.)

3

Lindane -- (1) structural use, (2) seed treatment, (3) ornamentals, forestry, Christmas trees; oncogenicity, reproductive effects, teratogenicity, acute toxicity, other chronic effects; (1) no alternative for control of dry wood termites, (2) no alternatives except for corn use, and (3) available alternatives are not cost-effective and are not efficacious.

Strychnine -- (1) ground squirrels, (2) marmots/woodchucks, (3) porcupines and (4) pigeons and house sparrows; reduction in non-target and endangered species; (1) lack of viable alternatives, (2) lack of effective alternatives, (3) no registered alternatives, and (4) lack of superior alternatives.

Toxaphene -- corn, cotton, small grains for specific insect infestations (emergency use only), pineapples and bananas for specific insects in Puerto Rico and the Virgin Islands only, scabies treatment for cattle and sheep; oncogenicity, acute toxicity to aquatic organisms, chronic effects to wildlife; lack of alternatives.

Creosote -- wood preservative; oncogenicity, mutagenicity; lack of cost-effective, efficacious alternatives.

Pentachlorophenol -- wood preservative; oncogenicity, fetotoxicity and teratogenicity; lack of cost-effective, efficacious alternatives.

Inorganic arsenicals -- wood preservative; oncogenicity, mutagenicity and teratogenicity; lack of cost-effective, efficacious alternatives.

The draft proposed policy lists steps EPA would take to encourage registration and/or use of alternatives to the above. These steps include: Waive tolerance fee; give priority to review of applications; reduce or delay data requirements to minimize cost to applicant, and:

"Upon registration of an adequately effective and significantly safer substitute for a listed use, immediately reconsider the registration of the pesticide with the reluctantly retained use. This may involve the initiation of Special Review or other agency action to consider cancellation or other limitations on the listed use."

The draft added, "The existence of cost-effective and safer non-FIFRA pest management practices could have the same effect upon the risk-benefit status of the listed pesticide uses as the registration of a cost-effective and safer pesticide under FIFRA."

The agency draft allowed 60 days for comment on the proposal and the list of "reluctantly retained" uses. "In addition," the draft stated, "the agency encourages submission of any information demonstrating that pest management practices not regulated under FIFRA, such as cropping practices or innovative uses of pesticides, can eliminate or reduce the need for any of the listed reluctantly retained pesticide uses of concern."

For updates on the status of proposed policy changes at EPA

CONTACT: MAX OLLIEU (WO)

(202) 453-9600





## PESTICIDE-RELATED PROVISIONS IN 1990 FARM BILL

As reported in "Pesticide and Toxic Chemicals News" in the May 9 edition, the 1990 farm bill, reported by the House Agriculture Committee's Department Operations, Research, and Foreign Agriculture Subcommittee, is expected to be marked up and reported shortly. One provision, offered by Committee Chairman Rep. de la Garza (D-Tex.), includes a requirement for improved recordkeeping. Records of restricted-use pesticides would be retained for two years.

De la Garza's bill would also establish within USDA an Office of Environmental Quality responsible for "ensuring that all USDA programs and policies are reviewed for their consistency with the Department's environmental protection goals." According to de la Garza's committee, the office "would also facilitate better communication and cooperation with other Federal agencies responsible for promoting environmental quality, especially the EPA."

In addition, the Farm Bill reported by the House subcommittee would, in part, establish at USDA an Office under the Assistant Secretary for Science and Education on Integrated Pest Management (IPM). This Office would also monitor pesticide resistance and improve funding for research by the Cooperative Extension Service.

A USDA office of Pesticide Assessments would also be established in order to assess agricultural pesticide benefits and the impact of EPA actions and regulations. A USDA/EPA Memorandum of Understanding would ensure that the assessments were: "suitable to the needs and requirements of the EPA; of sufficient quality to be publishable works of research, and released in a timely manner with respect to proposed EPA regulations." The Office would also collect agricultural pesticide use information.

If the 1990 Farm Bill is passed, USDA would establish a national pesticide education program as well as strengthen "existing education programs of each State." The goal of these programs would be to ensure that: (1) Pesticide users and dealers understand and adopt appropriate uses, application methods, control measures, safety precautions and safe methods of disposal of residues and containers; and (2) pesticide users and dealers understand the implications of their actions and the potential effects on water."

The sustainable agriculture research and education program provided for in the bill would authorize funding of \$40 million a year for research and extension. There would be a 50-50 Federal-State matching grant program to help States establish their own programs. The committee noted that the bill would authorize \$40 million a year "for training Extension Service personnel on sustainable agriculture practices and to giving detailed information on the selection of crops and crop-plant varieties, rotation practices, soil building practices, tillage systems, nutrient management, IPM practices, habitat protection, livestock management, soil, water and energy conservation, and any other practices..."

On the Senate side, the 1990 Farm Bill has a provision in the version reported by the Committee on Agriculture, Nutrition and Forestry for the training of applicators in the use of fertilizers and general-use pesticides (see next item). USDA would develop the training, receiving \$15 million a year for the effort. Training applicators in the use of restricted-use pesticides would remain with EPA.

For updates on pending pesticide-related legislation

CONTACT: MAX OLLIEU (WO)

(202) 453-9600





## EVERY APPLICATOR WOULD HAVE TO BE CERTIFIED UNDER NEW PESTICIDE BILL

Every applicator, private or commercial, applying any pesticide would have to be certified and keep records of pesticide applications according to a bill introduced in the Senate by Sen. Lieberman (D-Conn.). The bill also changes the threshold for suspension from "imminent" hazard to "significant" risk. "If our bill had always been law," said Lieberman, "Alar and EBDCs could have been taken off apples and other vegetables during the early 1970s." Added co-sponsor Sen. Reid (D-Nev), "This legislation will help reassure parents that the food they buy for their kids is not poisoned by pesticides." Features of the bill, entitled, "The Pesticide Health and Safety Act of 1990" include:

- "Definitions: Expands the definition of certified and private applicators to cover those who use all types of registered pesticides. Expands the term 'environment' to cover population subgroups e.g., pesticide-sensitive individuals.
- "Registration: Amends the registration provisions of FIFRA to ensure that a pesticide's effects on the health of children and other population subgroups are specifically reviewed prior to registration. Requires that EPA establish specific standards for the review of a pesticide's neurotoxic effects.
- "Certified applicators: Certification standards must provide that a certified applicator is proficient in integrated pest management.
- "Cancellation: The cancellation standard is revised to enable the EPA Administrator to cancel a pesticide when there are prudent concerns that the pesticide causes unreasonable adverse effects on human health or the environment. The registrant has the burden of showing that the standard for cancellation has not been met.... In determining whether to cancel a pesticide, the Administrator must review the impact of the cancellation on the price and availability of vital retail foods, analyze the available substitute chemical and nonchemical pest control methods and alternative agriculture techniques, and, if the pesticide is used on more than one commodity, review its cumulative effect on human health and the environment.
- "Suspension: The suspension standard is revised to enable the Administrator to suspend a pesticide upon a determination that use of the pesticide may cause significant adverse effects to human health or the environment....
- "Sunset provision: All pesticide registrations and tolerances will expire every nine years.... The already-established fees collected in conjunction with reregistration shall be available to conduct research on the neurotoxic effects of pesticides.
- "Recordkeeping: The Administrator shall require commercial and private applicators to keep records of all pesticide applications.
- "Scientific Advisory Panel: The membership of the panel shall include a pediatrician and a scientist trained in public health. The Administrator shall require each nominee to provide information on previous employment and consulting activities. No member of the panel shall be permitted to consult or receive any direct or indirect benefit from a company with any interest in pesticide products while serving on the panel...."

For additional information

CONTACT: LEGISLATIVE AFFAIRS (WO)

(202) 447-7531



# PESTICIDE BUSINESS BRIEFS

Sandoz and Scott to Develop Garden Products. Sandoz Crop Protection, Des Plaines, Ill., and O.M. Scott & Sons, Marysville, Ohio, plan to jointly develop and market biological pest control products for home garden and lawn care markets. Sandoz Crop Protection, a division of the North American arm of Switzerland's Sandoz Ltd., produces biological pest control products for agricultural markets. The new products, to include biological insecticides, are expected to be commercially introduced in the U.S. and Canada in 1991. The insecticides will be based on naturally-occurring insect toxins.

For additional information

CONTACT: SANDOZ (IL)

(312) 699-1616

New Fungicide Registered for Oak Wilt in Texas. Ciba-Geigy Corporation recently received a 24C Special Local Needs registration in Texas for the fungicide propiconazole for use in tree injections. The fungicide will be sold under the trade name ALAMO and is labelled for preventive and therapeutic treatment of oak wilt (caused by the fungus *Ceratocystis fagacearum*) in live oak. The fungicide prevents disease development in trees when used as a preventive treatment in advance of infection and also has some therapeutic effect on recently-infected trees. The fungicide does not, however, stop tree-to-tree spread of the fungus through common or grafted root systems.

The label states that the fungicide is to be used by "trained arborists and others trained in injection techniques and in the identification of oak wilt." Dr. Jerral Johnson of the Texas A&M University Extension Service is organizing a series of training sessions in central Texas for arborists and others.

Research by Dr. David Appel of Texas A&M University led to the registration of the product. Dr. Appel used injection methods similar to those used in Dutch elm disease treatments. Propiconazole is a sterol-inhibitor and is also formulated and registered for use against other fungal diseases of turf, rice, and pecans.

For additional information

CONTACT: DALE A. STARKEY (LA)

(318) 473-7293

Granular Carbofuran Products May be Cancelled. According to "Pesticide & Toxic Chemical News," (May 16, 1990) FMC Corporation may soon voluntarily cancel granular carbofuran products that are intended for soil surface use. The reason--risk to birds. The affected uses are for granulars on grapes, peppers, potatoes, sugar cane, tobacco, Siberian elm, cottonwood, and pine seed orchards. The last use pattern might be retained if FMC, EPA, and the Forest Service can agree on label changes that would reduce avian risk. Dr. John W. Taylor, the contact point, and others are working with Mr. Richard Tinsworth, Director, Special Review and Reregistration Division, Office of Pesticide Programs, EPA.

For additional information

CONTACT: JOHN W. TAYLOR (GA.)

(404) 347-2961





## FOREST SERVICE ANNOUNCES GYPCHEK PURCHASE PLAN

7

In the May 14 issue of the Commerce Business Daily, the USDA Forest Service issued the following announcement:

### "Chemicals and Chemical Products

THE PRODUCTION AND PROCESSING OF ENVIRONMENTALLY SAFE BIOLOGICAL PESTICIDE (REGISTERED GYPCHECK) TO BE USED IN CONTROL OF GYPSY MOTH. Douglas Lee, Contracting Officer, (703-235-8168); Dennis Hamel, Technical Representative, (202-453-9600). The Forest Service intends to negotiate with Espro, Inc., Columbia, Maryland, to produce and process environmentally safe biological pesticide to be used in control of gypsy moths as an alternative to conventional chemical pesticides. The insecticide to be produced is a naturally occurring nucleopolyhedrosis virus of the gypsy moth which is registered with the U.S. Environmental Protection Agency (EPA) as GYPCHECK. As a result of a previous competitive requirement, Espro, Inc. was awarded a technology transfer agreement with the Forest Service to produce GYPCHECK insecticide and to begin to develop a prototype commercial production system for large quantities of GYPCHECK. the proposed contract is estimated to be \$3 to \$3.5 million over a five year period. See Numbered Note 22 (129)," which is reproduced below:

"This contract action is for supplies or services for which the Government intends to solicit and negotiate with only one source under authority of FAR 6.302. Interested persons may identify their interest and capability to respond to the requirement or to submit proposals. This notice of intent is not a request for competitive proposals. However, all proposals received within forty-five days after the date of publication of this synopsis will be considered by the Government. A determination by the Government not to open the requirement to competition based upon responses to this notice is solely within the discretion of the Government. Information received as a result of the notice of intent will normally be considered solely for the purpose of determining whether to conduct a competitive procurement."

For additional information on GYPCHECK production

CONTACT:	DENNIS HAMEL (WO)	(202) 453-9600
	DOUG LEE (WO)	(703) 235-8168

### MEETINGS, SYMPOSIA, AND SEMINARS

Resource Technology '90. Resource Technology '90 (RT-90), an "International Symposium on Advanced Technology in Natural Resource Management," will take place November 12-15, 1990, in Washington D.C. The conference will focus on new technologies that are currently applicable, globally available, and show integration. The conference is sponsored by eight natural resource management agencies, along with NASA, NOAA, US-AID, Hewlett-Packard, Andersen Consulting, ITRI (Taiwan), and EPA.

For additional information

CONTACT:	WILLIAM WHITE	(303) 498-1785
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Global Positioning System Seminars Offered. The Missoula Technology Development Center (MTDC) is again sponsoring a Global Positioning Systems (GPS) seminar in cooperation with the University of Montana School of Forestry and the Center for Continuing Education. The seminar, "Introduction to Satellite Navigation in Resource Management," will be offered four times: June 19-21, September 11-13, October 2-4, and October 9-11.

Each three-day session will emphasize hands-on use of GPS instruments under field conditions typical of natural resource management. The seminars include classroom instruction and field exercises. GPS is a satellite-based radio positioning/navigation system. It enables users to determine their locations worldwide on a 24-hour basis using lightweight hand-held receivers.

The seminars take place at the University's Lubrecht Experimental Forest, 25 miles east of Missoula. Session fee is \$350 per participant. The fee includes transportation to Lubrecht and lunch each day.

For additional information

CONTACT: TONY JASUNBACK (MT)

(406) 243-4623

Pesticides Shortcourse and Companion Publication Available. A Chemistry, Biochemistry, and Toxicology of pesticides shortcourse is offered annually at Oregon State University. The course is, in part, based on the publication, "Chemistry, Biochemistry, and Toxicology of Pesticides."

The purpose of the shortcourse is to familiarize consultants, applicators, fieldmen, and growers with the basic elements of the chemistry of pesticides. This includes an understanding of the methods by which pesticides are grouped as being similar in their properties, how these properties affect their behavior in the environment and toxic action, how some chemicals cause cancer, and how these concepts are used to evaluate the hazard of a pesticide.

The program is one in a set of five educational programs presented annually by OSU on:

1. Entomology,
2. Weeds,
3. Plant Disease,
4. Pest Management, and
5. Chemistry, Biochemistry, and Toxicology of Pesticides.

Although the programs were not developed for the purpose of pesticide applicator licensing or re-certification, they have become valuable tools for that purpose in Oregon. They also can be used elsewhere.

For additional information

CONTACT: JAMES M. WITT (OR)

(503) 737-2906



Animal Damage Management Symposium Scheduled. A symposium entitled "Silvicultural Approaches to Animal Damage Management in Pacific Northwest Forests," is scheduled to be held October 23 and 24 at Oregon State University. Sponsored by the Pacific Northwest Research Station, Region 6, Oregon State University, and the Oregon Chapter, Society of American Foresters, this 2-day symposium will focus on the use of a broad range of silvicultural approaches to limit animal damage to Pacific Northwest forests. It will bring together the authors of a forthcoming book designed to summarize what is known about the response of wildlife species to silvicultural practices, and how these practices can be manipulated to avoid or minimize animal damage. Although emphasis will be given to animal damage management in the Pacific Northwest, certain principles and concepts will apply nationwide.

The symposium should be of interest to forest silviculturists, wildlife biologists, forest pest management specialists, and other professionals concerned with animal damage management.

For additional information

CONTACT: HUGH C. BLACK (OR)

(503) 326-4091

Herbicide Action Seminar Planned. Two sessions (November 4-9 and November 11-16) on the activity, selectivity, behavior, and fate of herbicides in plants and soils are scheduled for presentation at Purdue University.

The sessions should be of interest to those working with agricultural chemical companies in research, development and technical service, to crop consultants, and to individuals in the public sector involved with weed control.

Each session will be taught in five day meetings. The sessions will consist of lectures (illustrated with slides whenever possible), demonstrations, and discussions. A book of lecture notes will be provided.

Subjects to be covered include:

1. Introduction to herbicides;
2. Principles of selective weed control with herbicides;
3. Penetration of foliar-applied herbicides;
4. Translocation of herbicides;
5. Uptake of herbicides from the soil;
6. Bioassays for herbicides;
7. Classification of herbicides by type of action;
8. Mode of action, characteristics, structure-activity relationships, uses, selectivity, bioassay methods, and metabolism;
9. Herbicide safeners;
10. Herbicide resistance;
11. Defoliants and desiccants; and
12. Timing of herbicide applications.

The registration fee is \$1,025. This includes a notebook with summaries of all lectures and extensive references on each subject.

For additional information

CONTACT: G.F. WARREN (IN)

(317) 463-1130





## PUBLICATIONS

A series of new publications have recently been published by Princeton Scientific Publishing Co., Inc. The publications are part of a series on "Advances in Modern Environment and Toxicology" and may be of interest to forestry pesticide users. Included are:

The Effect of Pesticides on Human Health. A publication that covers current pesticide products and use, types of pesticides, risks and benefits of pesticide use, pesticide exposure levels, adverse health effects of pesticides, assessing human health risks, pesticides versus other health risks. It also includes chapters on exposure to pesticides, neurotoxic, carcinogenic, immunologic, reproductive, and developmental effects of pesticides.

Safety Evaluation: Toxicology, Methods, Concepts and Risk Assessment. A publication that covers advances in modern toxicology such as: risk assessment in toxicology; quantitative cancer risk estimation; regulatory issues associated with uses of alternative tests; quality assurance principles for applied toxicology; risk assessment at the occupational safety and health administration; genetic toxicology; developmental toxicity protocols utilized in the safety evaluation of chemicals; recognition of teratogens in occupational settings; delayed effects of prenatal exposure to xenobiotics, alternatives to the current linear non-threshold dose response approach to carcinogen risk assessment; structural relations and dose response studies in nitrosamine carcinogenesis; and carcinogenic natural products in the environment.

Risk Assessment and Risk Management of Industrial and Environmental Chemicals. This volume contains analysis of the quantitative aspects of risk assessment and exposure assessment including the uncertainty involved. Specific areas such as radiation health effects; epidemiology and developmental toxicology are discussed along with possible mechanisms causing cancer and the presence of threshold carcinogens. Aspects of regulation of food and its carcinogenic potential are also reviewed.

Environmental and Occupational Cancer: Scientific Update. This publication concerns itself with subjects such as carcinogenic natural products in the environment, health-risk estimates for 2,3,7,8-tetrachlorodibenzodioxin, health-risks caused by lead (Pb) in drinking water, estimating the health risk due to exposure to radon in indoor air, occupational and environmental exposure to N-nitroso compounds; types and amounts of carcinogens as potential human cancer hazards; formaldehyde as an experimental, multipotential carcinogen; inducible cellular responses to ultraviolet light irradiation and other mediators of DNA damage in mammalian cells; asbestos-related disease; and an overview and association of human risk with environmental exposure to 2,3,7,8-tetrachlorodibenzo-p-dioxin.

For additional information

CONTACT: PRINCETON SCIENTIFIC PUBLISHING (NJ) (609) 683-4750



## Publications (cont.)

HERBICIDE APPLICATION EFFICIENCY--A THESIS BY BRIAN RICHARDSON,  
FOREST RESEARCH INSTITUTE, NEW ZEALAND

Persons interested in herbicide application will, no doubt, find Brian Richardson's thesis, "The Role of Droplet Size, Concentration, Spray Volume, and Canopy Architecture in Herbicide Application Efficiency" of interest. Conclusions and recommendations from the thesis are summarized as follows:

Conclusion A simulation model, based on foliage density and structure, can provide a reasonable prediction of the herbicide deposition profile. To best utilize the model it should be integrated with a model such as the FSCBG which calculates the droplet trajectory, and accounts for evaporation, canopy penetration, meteorology, and aerodynamic effects of the spray platform. To maximize efficacy of glyphosate on bracken, smaller droplets and a concentrated spray mixture are required. With manzanita, application factors which maximize wetting such as small drops and high volumes, increase efficacy. The droplet trajectory has a large influence on the quantity and distribution of spray deposited and distribution of spray deposited within and below a plant canopy. Application methods which give the spray a more horizontal trajectory and increase the path length through the canopy will tend to increase deposition, especially on vertical oriented manzanita foliage. This suggests that aerial applications to manzanita may be preferable to ground applications because of the high initial horizontal velocity conferred to the spray from aircraft. Applications made in a cross wind may also be preferable because of the added horizontal velocity component.

Research Recommendations: In the broad field of herbicide application many areas of research need attention to improve application efficiency. The greatest deficiency is defining the biological requirement, in field situations, for most herbicide/weed combinations. After more research some generalizations may be forthcoming. Needed is a model that calculates a probabilistic plant response to herbicide applications and incorporates factors such as variability in pattern, in sensitivity, and in crown geometry of the target species. The model should be capable of identifying that portion of the initial population that remains after treatment.

One of the greatest engineering challenges is development of a high output nozzle which produces a narrow droplet spectrum and eliminates production of droplets less than 100-150 micrometers.

This and other research shows that herbicides are generally more effective when applied as small droplets. Herbicide sprays, however, are usually applied as large droplets. Studies are needed to quantify the cost of this loss in efficacy compared to any increased risk, in terms of drift potential, from using small droplets. Granular formulations may ultimately prove the best solution for areas where there is an extreme drift hazard, provided inefficiency inherent in the soil as a receptor medium can be overcome.

Improvements in the evenness of herbicide distribution, across and along the swath produced by granular and liquid applicators, would increase efficiency. Developments to improve aircraft and ground sprayer track guidance would help in this respect.

For a copy of the full thesis

CONTACT: JACK BARRY (CA)

(916) 758-4600

END





SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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FOREST PEST TREATMENT UPDATE

**Gypsy Moth:** Of the nearly 1.7 million acres planned for gypsy moth treatment in 1990, nearly 25% has been completed. In the east, about one half million acres have been treated with diflubenzuron (45%) and Bt (54%) in VA, WV, DE, MD, NJ, and PA. In the west, eradication efforts are underway in Idaho and Utah. In Utah, a late frost killed gambel oak leaves above 6,500 ft.; however, 3,453 acres of lower elevation land were treated.

**Grasshoppers and Mormon Crickets:** In Utah, orthopterans are creating problems on more than 150,000 acres of National Forest System lands. Treatments in cooperation with the Animal and Plant Health Inspection Service are underway.

**Seed and Cone Insects:** On May 9, Forest Pest Management in R-6 cooperated in the treatment of 13 hectares (32 acres) of the Oregon Department of Forestry's Schroeder Seed Orchard with Asana XL, a pyrethroid pesticide that contains the active ingredient esfenvalerate. Also treated were 10 hectares (24.7 acres) of the BLM Horning Seed Orchard.

For additional information on any of these projects

CONTACT: STEVE MUNSON (UT)                      FTS: 586-5459  
             ROGER SANDQUIST (OR)                 FTS: 423-2727

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.



## TERMITES AND TEMPERATURES

As concern builds over the threat of global warming, scientists are trying to understand why atmospheric levels of methane, a greenhouse gas, have more than doubled in the last two centuries. Researchers in the early 1980s suggested termites may deserve partial blame for the increase, but a new, comprehensive study downplays their role.

"Although the uncertainties are still very large, the weight of the scientific evidence is shifting toward the conclusion that termites are not an important global source of methane," report M. Aslam K. Khalil and R.A. Rasmussen at the Oregon Graduate Center in Beaverton, Oregon. Their work is described in the March 20 issue of the **Journal of Geophysical Research**.

The researchers measured gases emitted by six termite species in Australia and reviewed the published data concerning how much food termites consume. They estimate termites worldwide emit about  $12 \times 10^{12}$  grams per year of methane, which amounts to about 2 percent of the methane released by all global sources each year. This number agrees with results from lab measurements and a field study in Africa.

In 1982, researchers from the National Center for Atmospheric Research in Boulder, Colorado, sparked the debate over termites when they reported estimates based on laboratory work that termites emit  $150 \times 10^{12}$  grams each year, which would constitute about 30 percent of the world's annual methane emissions. They also suggested that human activities such as deforestation have boosted termite populations, which could explain part of the rise in methane concentrations.

Khalil says the earlier study overestimated the amount of food consumed by termites each year and did not take into account methane absorption by the ground near termite mounds, a fact discovered only during field experiments. According to Khalil, the methane buildup in the atmosphere stems not from a population explosion in termites but from increasing numbers of rice fields, cattle, and sheep.

For additional information on termites and temperatures

**CONTACT: M. ASLAM K. KHALIL (OR)                      (503) 690-1078**

## BEHAVIOR-MODIFYING CHEMICALS PUBLICATION

A new publication entitled **Behavior-Modifying Chemicals for Insect Management: Applications of Pheromones and Other Attractants** has recently been published and is available from Marcel Dekker, Inc. The 760-page, illustrated book was edited by Richard L. Ridgway, Robert Silverstein, and May Inscoe. It includes a section on Forest Insect Pests with contributions by John Borden, Gary Daterman, Chris Sanders, and Doug Kolodny-Hirsch. Other topics covered include: Principles of Research and Development; Pests of Horticultural Crops; Pests of Field Crops; Stored Product Insect Pests, and Insects Affecting Animals; Development, Registrations, and Use; and Prospects.

For a copy of this \$195.00 publication

**CONTACT: MARCEL DEKKER, INC.                      1-800-228-1160**







### CONTAINER TREE NURSERY MANUAL PUBLISHED

A new volume (No. 5) in the series of **Container Tree Nursery Manuals** was recently released by the USDA Forest Service as Agriculture Handbook No. 674 (March, 1990).

The **Container Tree Nursery Manual** consists of a series of separate, sequential volumes. Each volume contains chapters on closely-related subjects concerning the production of tree seedlings in containers. The volumes are intended for use by specialists needing information on a particular subject. Because several subjects must be discussed in more than one volume there is some redundancy. Some subject repetition is justified, however, because most readers will be using the Manual as a technical reference and not reading the entire text.

The **Container Tree Nursery Manual** is structured around an outline of numerical organizational headings that allow the reader to locate a specific subject quickly without referring to an index. The general outline by volume and chapter titles is as follows:

#### Volume I--Container Nursery Planning, Development, and Management

- Chapter 1: Initial Planning and Feasibility Assessment
- Chapter 2: Site Selection
- Chapter 3: Nursery Layout and Growing Facilities
- Chapter 4: Non-structural Equipment and Controls
- Chapter 5: Auxiliary Equipment and Buildings
- Chapter 6: Shadehouses, Bedhouses, and Tunnels
- Chapter 7: Nursery Management
- Chapter 8: Troubleshooting Container Nursery Problems

#### Volume II--Containers and Growing Media

- Chapter 1: Containers: Types and Functions
- Chapter 2: Growing Media

#### Volume III--Container Nursery Environment

- Chapter 1: Temperature
- Chapter 2: Humidity
- Chapter 3: Light
- Chapter 4: Carbon dioxide

#### Volume IV--Seedling Nutrition and Irrigation

- Chapter 1: Mineral Nutrients and Fertilization
- Chapter 2: Irrigation and Water Management

#### Volume V--The Biological Component: Nursery Pests and Mycorrhizae

- Chapter 1: Disease and Pest Management
- Chapter 2: Mycorrhizae

#### Volume VI--Container Seedling Propagation

- Chapter 1: Stock Type and Growing Schedules
- Chapter 2: Seed Factors and Presowing Treatments
- Chapter 3: Sowing and Other Propagation Methods



- Chapter 4: Establishment Phase
- Chapter 5: Rapid Growth Phase
- Chapter 6: Hardening Phase

Volume VII--Seedling Processing, Storage, and Outplanting

- Chapter 1: Processing and Storage
- Chapter 2: Handling and Transportation
- Chapter 3: Outplanting

The current addition to the series, "The Biological Component: Nursery Pests and Mycorrhizae," is based on the best knowledge on container tree nursery management and should be used as a general reference. Much of the information in the Manual was developed for western and southern conifer seedlings; however, the authors attempted to include information for species from other geographical areas. Because of the wide variation in individual species responses, container nursery managers will need to adapt these principles and procedures to their own situations.

Pesticide trade names are used throughout the Manual but are only provided as examples with no endorsement of specific products, to the exclusion of equally suitable products, is implied. The mention of specific pesticides is intended only for general information and should not be construed as an endorsement. Because of frequent changes in pesticide registrations, readers should check with local authorities to make sure that an intended use is both safe and legal.

For copies of AH 674 or to bring any errors to the attention of the authors or to make suggestions for improvement

CONTACT: THOMAS D. LANDIS (OR)

(503) 326-2727

INSECT REPELLENT RECALLED

The S.C. Johnson Company recently announced the recall of their insect repellent, Deep Woods Off!, which contained a component known as MGK-11. The manufacturer of this component, McLaughlin Gormley King, decided to cancel the registration of R-11 in the U.S. and Canada and thus, S.C. Johnson is removing R-11 from their products. The newly reformulated product is now identified by a sticker on the top of the can that reads "New Formula." Old products identify R-11 as 2,3,4,4-bis (2-butylene) tetrahydro-2-furaldehyde.

Other manufacturers are also beginning to recall their products; there are currently 188 registered insect repellents for human use which contain R-11, including Cutter, 6-12, and Repel.

The recall of R-11 is based on interim results of an oral feeding study indicating oncogenicity and reproductive effects (ovarian atrophy).

For additional information on this recall

CONTACT: MCLAUGHLIN GORMLEY KING CO. (MN)

(612) 544-0341





## BIOTECHNOLOGY

Biotechnology, the use of living organisms, cells, subcellular organelles, and/or parts of these structures, as well as molecules, to effect biological, chemical, or physical changes, is a research area assigned to the Agricultural Research Service (ARS). The concept of biotechnology and ARS research in this area are described in a new ARS Program Aid (No. 1445) issued January, 1990. The kinds of research described in the 27-page brochure include:

### **Conservation of Natural Resources:**

- Reducing and eliminating effects of pollutants.
- Adapting plants to marginal growing conditions.

### **Crop Production and Protection:**

- Developing farm and forest products that are:
  - Highly adapted to environmental stresses.
  - Tailored to have the best possible quality.
  - Able to fix (convert to usable form) atmospheric nitrogen.
- Increasing plant resistance to diseases, insects, and other pests.
- Using biochemical and genetic engineering to enhance the effectiveness of beneficial insects, parasites, viruses, bacteria, and other biological and biologically-based methods of controlling pests.

### **Animal Production and Protection:**

- Developing more effective diagnostic tests for costly diseases of beef and dairy cattle, pigs, sheep, chickens, and turkeys.
- Producing new and more reliable preventive measures against livestock diseases.
- Improving the effectiveness of biocontrol organisms, or their products, used against livestock insects, ticks, and other pests.

### **Postharvest Quality and Use:**

- Improving the safety and quality of foods.
- Enhancing non-food uses of farm products.
- Developing new uses for farm products.

### **Human Nutrition:**

- Determining human body needs (amounts and combinations).

Specific areas of biotechnology research at ARS include: monoclonal antibodies; DNA hybridization; recombinant DNA, gene mapping, tissue culture, gene transfer, protoplast fusion, biochemical engineering, and bioregulation.

For a copy of ARS Program Aid No. 1445

**CONTACT: ARS BIOTECH MATRIX TEAM (301) 344-3918**



### BIOTECH USA '90

Developed and managed by **Bio/Technology** magazine, BioTech '90 is scheduled for November 27-29, 1990. The conference program is focusing on four areas:

PharmBiotech  
AgBiotech  
BioLab  
BioBusiness

For additional information

**CONTACT: BIOTECH USA  
CONFERENCE MANAGEMENT CORPORATION  
200 CONNECTICUT AVENUE  
NORWALK, CT 06854-9961**

### EPA "SCANS" PESTICIDES

The U.S. Environmental Protection Agency (EPA) has turned to a new bar-coding system to help keep track of the more than 25,000 registered pesticides used in the U.S. With tens of thousands of pesticide documents managed by nine different EPA project managers, the information, including that on the Forest Service-registered product like GYPCHEK, needed to be organized. "This was a chronic problem that never had the priority to really be addressed," said Arthur Donner, head of the administrative processing section of EPA's Office of Pesticides and Toxic Substances. The "documents" are actually large file folders containing information about each pesticide, including the initial registration application and all related correspondence.

About two years ago, as a result of an EPA-sponsored productivity improvement initiative, the idea of using a bar-code system to automate the document library received \$50,000 in funding. More sources of funding were found for a total of \$120,000. "I chose the bar-code method as the most accurate, least obtrusive means of identifying documents and their location," Donner said. Each folder is assigned two bar-code identification labels: one is a commercial registration number and the other is an EPA-assigned sequential number. Both numbers are linked in the database so EPA can search for a document with either piece of information. Each rotary file cabinet with the documents has a bar code, as does each shelf. The documents need not be kept in any specific order and can be placed wherever space is available. Donner has even assigned bar-code numbers to EPA employee-identification badges, so that the employee and the documents checked out are "scanned" automatically into the database.

For additional information

**CONTACT: EPA OFFICE OF PESTICIDE PROGRAMS**

**(703) 557-7090**





"SHORT SUBJECTS..." MID-YEAR INDEX

About mid-way through each year an up-to-date index of topics covered in earlier issues of the "Short Subjects..." pesticide newsletter is distributed. What follows is the mid-year index for 1990.

Questions may be addressed to the Washington Office.

CONTACT: DENNIS R. HAMEL

(202) 453-9609

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5/15/90

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**SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS**

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**GYPSY MOTH TREATMENTS UNDERWAY**

In addition to the gypsy moth eradication efforts already outlined in "Short Subjects . . . , " Issue No. 90-6, suppression activities are now underway in Delaware, Maryland, Pennsylvania, and Virginia. To date, 34,934 acres have been treated in cooperative pest suppression efforts. An additional 44,599 acres have been treated on Federal lands such as the C&O Canal, George Washington Memorial Parkway, Goddard Space Center, Patuxent Wildlife Refuge, and Quantico Marine Base.

For up-to-date information on gypsy moth suppression activities

**CONTACT: TOM HOFACKER (WO)**

**(202) 453-9595**

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.





### HERBICIDES IN THE LAKE STATES

On March 21, 1990, the National Forest Supervisors in the Lake States (Chequamegon, Nicolet, Ottawa, Chippewa, Superior, Hiawatha, and Huron-Manistee) sent a letter to their Regional Forester indicating that they were electing not to continue preparation of Environmental Impact Statements (EISs) proposing use of herbicides. The agreement reached by the Lake States supervisors is intended to impact only National Forests in Minnesota, Wisconsin, and Michigan. Only herbicides were affected. Other pesticides (insecticides, fungicides, and rodenticides) are not affected by the decision. Associated with the letter of agreement sent to Regional Forester Marita was a commitment to continue monitoring and evaluation of implementation of the Forest Plans. If monitoring reveals that National Forest goals and objectives are not being met, the current strategy will be reconsidered.

According to the Forest Supervisors, the agreement was reached after careful consideration of all the management concerns that must be addressed on the National Forests, primarily the high cost of developing EISs, both in terms of budget and personnel. The Forest Supervisors of the Lake States believe that they can implement their Forest Plans without the use of herbicides at this time and choose to concentrate on other high priority issues. This is not expected to result in any need to amend Forest Plans.

As a result, most use of herbicides on the Lake States National Forests will be suspended. Seed orchards and nurseries are not affected by this decision since separate analyses are being conducted regarding these activities.

For additional information on herbicide use in the Lake States

**CONTACT: HERBICIDE CORE TEAM (R-9)  
REGIONAL OFFICE; DG:R09A**

### ROTENONE USE PLANNED

The USDA Forest Service has been advised by the State of Utah, Division of Wildlife Resources, that they plan to use a million pounds of rotenone to rehabilitate Strawberry Reservoir and its tributaries, to eliminate nongame fish and provide a minimum sustained output of 1.2 million hours of angling recreation annually.

Rotenone will be applied at an overall concentration of 1.77 parts per million. All tributaries will be treated with emulsified rotenone at the same concentration. Outflows from the reservoir will be treated with potassium permanganate to neutralize the rotenone before the water passes downstream.

The treatment is scheduled to begin August 6, 1990, on 36 streams representing 125 miles. Reservoir treatment will begin August 18 to 25th and will involve treating 360,000 to 380,000 acre feet. A second stream treatment is to begin October 1 to 20th.

For additional information on this project

**CONTACT: GARTH BAXTER (UT) (801) 625-5258**





### NEW GENERATION OF BIOPESTICIDES MAY BE ON THE WAY

Growing concern over health effects and the environmental safety of chemical pesticides is leading to increased interest in finding alternatives. Biopesticides, based on naturally-occurring insect or plant toxins, are emerging as a means for more environmentally benign pest control. Mycogen, an agricultural biotechnology company located in San Diego, California, is nearing commercialization of a new generation of biopesticides.

Biopesticides have been commercially available for about 20 years but have had only a minor impact on the nearly \$20 billion worldwide pesticide market. In 1989, biopesticides accounted for less than 1% of the \$5 billion U.S. pesticide market. Available products primarily consist of pyrethroids and insect toxins isolated from strains of the bacterium Bacillus thuringiensis (Bt). The limited commercial success of biopesticides is related in part to their rapid degradation in the environment. This leads to inconsistent performance, decreased effectiveness, and higher costs for repeated application.

Biotechnology offers new possibilities for producing protein toxins through large-scale fermentation processes or genetic engineering and Mycogen has apparently developed a bioengineering technology that overcomes some of the problems associated with Bt-based biopesticides. The company introduces a gene isolated from Bt into Pseudomonas fluorescens, a commonly occurring micro-organism found on plants. After the engineered cells produce the toxin, they are killed and treated with a process that stabilizes the cell wall. The result is an encapsulated toxin crystal with a protective coat. Such new technologies can make biopesticides that are as effective as chemical pesticides but safer to the environment.

Mycogen's first bioinsecticide, M-One, was not an encapsulated product but instead is isolated from a Bt strain discovered by the company and used for Colorado beetle control.

Despite EPA's expedited approval process for biopesticides, registration can be delayed if environmental concerns are raised about genetically-engineered products. The concerns of EPA and environmental groups are on how the genetically-engineered microbial pesticides are contained so that a colony does not become established in a nontarget area. By packaging the toxins in non-viable cells, uncontrolled release and proliferation of the organisms is not possible. There have been few challenges to Mycogen's dead-cell concept or to the naturally occurring, biodegradable toxins themselves.

The company's first genetically-engineered product was MVP, an encapsulated Bt toxin for caterpillar control. The product has an approved EPA experimental use permit and it is expected to be launched this year. Mycogen's technology can be used to encapsulate many genetically engineered toxins. Since the process is done in the fermentation tank, it adds little to production costs. Unlike processes that might destroy or degrade a protein's activity, stabilizing the cell wall does not. Contributing to Mycogen's move toward commercial viability is the company's recent acquisition of the commercial and agricultural products division of Safer, Inc., developers of biodegradable pesticides based on fatty acid technology.

For additional information on how Mycogen plans to accelerate its production, processing, and delivery of biopesticides

CONTACT: MYCOGEN (CA)

(619) 453-8030





### EPA RESPONDS, IN PART, TO FS PETITION ON PHEROMONES

On March 22, the U.S. Environmental Protection Agency (EPA) responded to some of the questions in a petition developed by the Forest Service (FS) and submitted on its behalf by John W. Kennedy Consultants. The primary purpose of the FS petition was to encourage the agency to eliminate the full registration requirements for all pheromones.

The EPA responded that before they act on coleopteran (bark beetle) pheromones they want to be given the opportunity to finalize a White Paper on lepidopterous pheromones. This paper is expected in June. After that time, EPA expects to develop consistent policies for the following issue areas:

- Multiple-year experimental-use permits (EUPs);
- Variable formulation acceptable for EUPs;
- Allowing multiple active ingredients in a single test;
- Exempting twist-tie pheromone devices;
- Exempting pheromones from tolerances;
- Reducing currently-required studies; and
- Expediting the review of pheromone review requests.

On a related issue, EPA recently responded to PheroTech, Inc. of Vancouver, British Columbia, advising them that the pine engraver beetle pheromone (ipsdienol) in traps is exempt from registration. The basis of EPA's exemption decision was Section 25(b) of FIFRA, as amended, and as clarified in Section 152.25(h) of the **Code of Federal Regulations**.

Justification for EPA's decision was based on PheroTech input that described the use of ipsdienol in 4-6 traps (containing only the pheromone and no toxicant) per acre. PheroTech had calculated that pheromone release from these traps would be about 2.4 mg per day per acre. A natural infestation of pine engraver beetles has the ability to produce anywhere from 0.26 to 15.8 g of pheromone per day per acre. Therefore, the artificial increase of ipsdienol in traps would be well within the limits of a natural infestation.

For updates on the pheromone issue

**CONTACT: DENNIS R. HAMEL (WO)**

**(202) 453-9600**

### HERBICIDES FOUND IN STREAMS

According to United Press International (May 4, 1990), testing by US Geological Survey has found low concentrations of atrazine and other herbicides at 79% of the 145 stream sites sampled in 10 midwestern states. This compares to relatively higher concentrations found at 98% of the sites last spring after herbicides had been applied to the fields.

Information on the use of atrazine and other herbicides by the USDA Forest Service is available from the Washington Office

**CONTACT: LARRY GROSS (WO)**

**(202) 453-9600**



### ACUTE TOXICOLOGY OF VEGETATION SMOKE

In a report recently submitted for journal publication, Dr. Frank N. Dost, Professor of Agricultural Chemistry and Extension Toxicologist, Oregon State University, has evaluated the "Acute Toxicology of Components of Vegetation Smoke."

Dr. Dost explains in the report that, "In spite of generations of experience, the basis for respiratory and eye irritation by vegetation smoke is not adequately understood. Increasing concern about the long- and short-term health consequences of residential, agricultural, and forestry burning is stimulating greater interest in examining the knowledge that exists and in designing research that will answer important questions." Dr. Dost's review is a study of existing literature that relates to acute effects of smoke.

In the review he states that, "Combustion of vegetation is one of the most common of all chemical reactions and may be the least well understood. The products of wood and foliage combustion are still not fully identified, and the relation between products and conditions of combustion is only partly clarified. Behavior of combustion products in the atmosphere is also largely unknown. With the chemical nature of smoke still somewhat mysterious, it is not surprising that the chemical basis for acute smoke toxicity is also not adequately known."

"The nature and risk of acute and chronic human health impacts of combustion products is just as far from resolution, at a time when more and more attention is being paid to the health of forest fire fighters and effects of smoke exposure. However, even with research gaps and the uncertainties of project identity, effects of combustion conditions on the formation of specific projects, exposure, and the nature of biological effects, it is still possible to make some progress in identifying the mechanisms of smoke toxicity with information now at hand".

The problem of concern, as identified by Dr. Dost, has three segments. The first is the need to examine known chemical and physical components of vegetation smoke, and to identify those that seem likely to contribute to the various acute effects associated with smoke exposure. The second is estimation of exposure, and the third is prediction of human responses under fireline and other environmental conditions.

A fourth segment not covered in Dr. Dost's paper is fire technology. With sufficient understanding of the amounts of products and their effects, modification of burning practice might be sought where necessary to alter the impact of emissions on certain populations.

In surveying the spectrum of vegetation combustion products that seem likely to produce the kind of acute responses associated with smoke exposure, a relatively small group stand out and are covered in Dr. Dost's review. They include: Formaldehyde and Formic Acid, Acrolein, Ozone, Free Radicals, and Particulates.

Each is covered in detail in Dr. Dost's publication. For a copy:

**CONTACT: LARRY GROSS (WO)**

**(202) 453-9600**







### STATUS OF VEGETATION MANAGEMENT APPEALS

Forest Pest Management in the Washington Office currently has the responsibility for managing the appeal process for four final vegetation management environmental impact statements (FEIS). The following summarizes the current status of these appeals:

In the Pacific Southwest Region (R-5) there have been twenty-two appeals filed in response to the Regional Forester's Record of Decision on the FEIS for Vegetation Management for Reforestation. The 22 appeals were divided into issue groups for analysis and for the development of decision letters. This process is currently underway with an estimated completion date of June 15, 1990.

In the Pacific Northwest Region (R-6) there are 9 appeals to the Regional Forester's decision on the FEIS for Managing Competing and Unwanted Vegetation. Decision letters have been written for all appeals and they have been reviewed by OGC. The estimated completion date for R-6 appeals is May 30, 1990.

In the Southeastern Region (R-8) there are two vegetation management FEIS under appeal:

COASTAL PLAIN/PIEDMONT FEIS -- Five appeals to the Regional Forester's decision to the FEIS for Vegetation Management in the Coastal Plain/Piedmont. Estimated completion/signoff date for the Coastal Plain/Piedmont appeals is May 30, 1990.

APPALACHIAN MOUNTAIN FEIS -- Eight appeals to the Regional Forester's decision to the FEIS for Vegetation Management in the Appalachian Mountains. Estimated completion/signoff date is July 15, 1990.

The following summary provides a quick reference on the status of these appeals.

REGION	NUMBER OF APPEALS	TECHNICAL RESPONSES	DECISION LETTERS	ESTIMATED DATE OF COMPLETION
5	22	22	5	6/15/90
6	9	9	9	5/30/90
8CP	5	5	5	5/30/90
8A	8	8	0	7/15/90

CP = COASTAL PLAINS/PIEDMONT EIS; A = APPALACHIAN MOUNTAINS EIS

For additional information on any pesticide-related appeals

CONTACT: JESUS COTA (WO) (202) 453-9600



### INDUSTRY-WIDE SPRAY DRIFT TASK FORCE FORMED

The U.S. Environmental Protection Agency (EPA) recently announced in a Pesticide Registration Notice (PR Notice 90-3) that they had formed an industry-wide spray drift task force. The task force was established pursuant to the provisions of FIFRA 3(c)(2)(B)(ii). A charge of the Task Force will be to develop a generic spray drift database which is expected to be capable of satisfying spray drift data requirements for virtually all pesticide product registrations in the U.S. and Canada. Because of the wide cross section of pesticide registrants who could potentially benefit from this endeavor, EPA has taken an unusual step to inform all pesticide registrants of its existence by issuing a Pesticide Registration Notice.

Groundwork for the Task Force has been laid through joint efforts of EPA, the National Agricultural Chemicals Association, Agriculture Canada, and Environment Canada. This approach to fulfilling pesticide spray drift data requirements should result in considerable financial savings for pesticide registrants, while at the same time providing the Agency with a more complete and scientifically sound basis for evaluating off-target movement of pesticides and assessing exposure of humans and the environment.

Pesticide registrants and those who have applied for or anticipate applying for registration of one or more pesticide products have the option of fulfilling spray drift data requirements, through participation in this Task Force, for registration standards, general data call-ins, accelerated reregistration under FIFRA 4 (FIFRA 88), and new product registrations now and in the future. The Agency will accept evidence of full and continuous participation in this Task Force to justify requests for extensions of deadlines for submission of spray drift studies.

The Task Force is organized as a business Joint Venture, with costs to be shared equally by all participants. Each participating company will appoint representatives to Administrative and Technical Committees. EPA is not an administrative participant in the joint venture, but is represented on the technical committee, which will guide development of the data base, select study protocols, and supervise research.

Anyone desiring further information should

<b>CONTACT:</b>	<b>JACK BARRY (CA)</b>	<b>(916) 758-4600</b>
	<b>CHARLES O'CONNER (DC)</b>	<b>(202) 789-7500</b>
	<b>JOHN J. LAMBER (PA)</b>	<b>(215) 299-6503</b>





### SOUTHERN PINE BEETLE MANAGEMENT OPTIONS CAUSE CONCERNS

Southern pine beetles (Dendroctonus frontalis), and attempts to manage them are once again raising concerns of persons interested in protecting southern pines, red-cockaded woodpecker (Picoides borealis), and the wilderness character of places like the Little Lake Creek Wilderness in eastern Texas.

Forest Service personnel from the Raven Ranger District, Sam Houston National Forest, recently treated 600+ trees in attempts to manage a rapidly-expanding southern pine beetle (SPB) "spot"; however, a concerned citizen group disagreed with FS plans to cut and hand treat some of the SPB-infested trees with chlorpyrifos (Dursban). A temporary restraining order was requested by the group but denied by the presiding judge.

Management of SPB in Wildernesses, especially where the red-cockaded woodpecker is endangered, is allowed based on a Record of Decision signed by the Chief of the Forest Service in 1987. Stringent criteria must be met before management action is undertaken. In the present case, the SPB "spot" was first detected almost a year ago. At that time it involved only about 15 trees but rapidly expanded to over 600 trees by this spring.

For more information

CONTACT: KEN SWAIN (GA) (404) 347-2961

### PESTICIDES AND HUMAN IMMUNE SYSTEMS

In what may be the first study to look at the direct adverse effects of pesticides on the human immune system, results show that individuals who are plagued by chronic illnesses of the autoimmune system such as arthritis, multiple sclerosis and colitis are significantly more sensitive to pesticides than those who are not.

Extrapolating from data collected on more than 8,000 patients, Dr. Russell Jaffe of the Serimmune Physicians Laboratory in Reston, Virginia, estimates that 16 million people experience some degree of immune system reaction to pesticides. Responses can range from runny eyes and itchy skin to shock and death.

Jaffe looked at the three major classes of pesticides--carbarnates, organophosphates and halogenated compounds--which account for 90 percent of all pesticide use and are used to control common household, garden and agricultural pests. He reports that the incidence of human reaction to organophosphates, toxins that block neural activity in insects, was highest, at 42 percent.

Jaffe credits his findings to the use of the ELISA/ACT test, a relatively new technique that allows amplified analysis of immune system reactions using a 1-ounce blood sample.

For additional information on pesticides and their potential effects on human immune systems

CONTACT: DR. JAFFE (VA) (703) 255-1157



A NEW GUIDE TO THE WEATHER

Dan Twardus, Forest Service entomologist, Morgantown Field Office, West Virginia, recently wrote and distributed a new publication entitled "A Guide to Weather and Gypsy Moth Spray Operations in the East."

The guide provides timely advise on how to evaluate weather conditions that could affect pesticide deposit and hence spray effectiveness.

Although specific to gypsy moth in the East, most of the principles apply nationwide. For example, the five conditions to be considered by pesticide users and discussed in the publication are:

1. Low humidity and high temperatures causing evaporation of volatile components of the spray.
2. Insufficient wind or turbulence resulting in a hanging spray cloud.
3. Inversion layer resulting in poor settling of smaller drops.
4. Thermals caused by the heating of an unstable air mass.
5. Rain or wet foliage causing spray runoff.

For more information or copies of this 12-page publication

CONTACT: DAN TWARDUS (WV) (304) 291-4133

END





SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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SPRUCE BEETLE "SILVER BULLET" MISFIRES

Over the past several years, inquiries and reports about the efficacy of insecticide injection/implantation for western bark beetle management have surfaced. In Alaska, it has been suggested that such techniques might be useful in the management of spruce beetle (Dendroctonus rufipennis) in white spruce (Picea glauca), Sitka spruce (P. sitchensis), and Lutz spruce (P. lutzii). Although lindane and carbaryl are registered, it was decided that acephate, dimethoate, and carbofuran implants should be tested. Dr. Pat Shea et al. conducted such an evaluation in 1987-88. Results were disappointing and did not produce the desired "silver bullet."

Two experiments were conducted on the Kenai Peninsula to evaluate the effectiveness of the three insecticides using Medicap<sup>R</sup> technology. The purpose was to evaluate: Beetle control in previously unattacked trees; beetle control in successfully attacked trees; and prevention of tree mortality. For additional information

CONTACT: ED HOLSTEN (AK)

(907) 271-2575

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PEST SUPPRESSION ACREAGES FOR 1990

Planned forest pest suppression projects for Fiscal Year 1990 include:

<u>Pest</u>	<u>Location</u>	<u>Pesticide</u>	<u>Acreage</u>	<u>Total</u>
Forest Tent Caterpillar	Menominee IR (WI)	DiFlubenzuron (Dimilin)	16,000	16,000
Gypsy Moth (AIPM)	AIPM Area (VA/WV)	DiFlubenzuron Bt GM Virus	131,875 135,474 2,866	270,215
Gypsy Moth (Coop.)	DE,MD,MI,NJ PA,VA,VT,WV	DiFlubenzuron Bt	540,740 761,882	1,302,622
Gypsy Moth (Fed.)	Seneca IR NFS Other Fed. States: MI,VT,VA,WV DC,MD,MI,PA VA,WV	DiFlubenzuron Bt Virus	9,054 30,092 100 (Some multiple applications)	58,513
Gypsy Moth (Eradication)	ID, NC, TN, UT	Bt	71,822 (Multiple applications)	71,822
Western Spruce Budworm	Yakima IR (WA)	Bt	70,944	70,944

These projects represent planned treatments on a total of 1,800,969 acres. Approximately 57% of treatments are planned using Bt; 39% diFlubenzuron (Dimilin), and 0.1% gypsy moth virus.

For overall questions about 1990 pest suppression activities

**CONTACT: FPM (WO)**

**(202) 453-9600**

NEW FEDERAL SUPPORT FOR RESEARCH?

Financial support for scientific research and development may soon be available through the National Initiative for Research on Agriculture, Food, and the Environment (NIRAFE). This program calls for new Federal support for research awarded on a competitive grant basis.

President Bush's FY 1991 budget proposal calls for an initial commitment of \$100 million to implement six areas of emphasis as recommended by a National Academy of Science study. Issues to be addressed in research include natural resources, health, international trade, and excellence in science and education. Additional information is being prepared, but for immediate info

**CONTACT: N. CLARKE (DC)**

**(202) 778-0858**





### PESTICIDE FORMULATIONS AND APPLICATIONS SYSTEMS REVIEW

The American Society for Testing and Materials (ASTM) recently published its Eighth Volume entitled "**Pesticide Formulations and Applications Systems.**" The publication is based on a symposium held October 21-22, 1987, in Bal Harbour, Florida. Topics at the symposium, and covered in the proceedings, include:

- Formulations: Past, Present, and Future;
- Philosophy of Formulations;
- Developments in Microencapsulation;
- Microbial Formulations;
- Selecting the Ideal Preservative for Aqueous Formulations;
- Using the Predictive Powers of Triangular Coordinate Plots;
- Quality Control of Surfactants for Pesticide Formulations;
- Plant and Mineral Oils as Insecticide Adjuvants; and
- Aerial Application of Granular Herbicides.

For copies of this publication

**CONTACT: ASTM (PA)**

**(215) 299-5585**

### AGDISP TRAINING

A four-day course on the use of AGDISP (AGricultural DISPersion model) was conducted recently (March 19) at Texas A&M University. The training session was jointly sponsored by the Missoula Equipment Development Center and USDA Agricultural Research Service, Pest Management Research Unit at College Station, Texas. MTDC provided one instructor (Bob Ekblad), overall coordination, reference material, and half the cost of the training contract with Continuum Dynamics, Inc. Texas A&M provided the training facility, personal computers, and half the cost of contracting.

Participants in the training were mostly engineers. They represented a wide range of aerial application programs/activities. Most participants were proficient computer users and quickly applied the model to problems from their own experiences.

For additional information on this training or future AGDISP training opportunities

**CONTACT: ROBERT EKBLAD (MT)**

**(406) 329-3988**

### ELECTRONIC PESTICIDE DATABASE AVAILABLE

The National Agricultural Chemicals Association (NACA) has developed an Electronic Data Exchange (EDE 3.0) to facilitate transfer of field research data for pesticides among university, industry, private sector, and government scientists in computer-readable form. NACA has played a leading role in setting standards for data exchange to expedite the evaluation and registration of pesticides. The new database improves on previous systems by providing data on herbicides, insecticides, and fungicides.

A programmer's kit and additional information are available

**CONTACT: R.S. MCALLISTER (DC)**

**(202) 296-1585**



## EVALUATION OF SWATH WIDTHS USED IN GYPSY MOTH TREATMENT AREAS

The Missoula Technology Development Center (MTDC) recently released a report entitled "**Swath Width Evaluation.**" The report uses the AGDISP model to evaluate spray swath widths for aircraft used in gypsy moth suppression efforts.

The AGDISP model predicts the motion of aerially released materials. Sixteen aircraft (both helicopter and fixed wing) were selected for the evaluation. Data on these aircraft were readily available from the open literature or spray operators. Three deposition tank mixes--Dimilin<sup>R</sup>, Undiluted Bt (Foray 48L<sup>R</sup>), and 1 to 1 diluted Bt (Foray 48L<sup>R</sup>)--were evaluated. The paucity of nozzle wind tunnel data on drip size distribution for these three tank mixes created a sparse matrix with which to predict swath widths using AGDISP; however, this report determined that:

- Swath width predictions, generated from a lane separation methodology, generally show larger values than the APHIS swath width guidelines;
- AGDISP code inputs for the swath width predictions are based on conservative assumptions on aircraft characteristics and atmospheric conditions. Swath widths for conditions other than those assumed in the report can be expected to be larger than predicted;
- Several aircraft inputs are very operator-specific (e.g., the location of the spray boom on a helicopter). Other configurations of the same aircraft (with the same flight speed) will cause minor changes.

The following recommendations resulted from the evaluation and are summarized in the report:

- Limited information is available on drop size distribution patterns from the more commonly used spray nozzles. Water-like material (e.g., Dimilin<sup>R</sup>) can be interpolated (and carefully extrapolated) from a known database of tunnel data as a function of flight speed. The same cannot be said for Bt-type products. Any significant extension of the present work has to include a matrix of wind tunnel tests to determine drop size distribution patterns on anticipated spray materials. Aircraft flight speed is a significant data parameter.
- Swath width is based on a lane-separation argument using relative standard deviation (coefficient of variation). The parametric level chosen in this report is consistent with best estimates found in the literature. Other swath width arguments could modify the results presented.
- AGDISP was modified on the mini-computer at Continuum Dynamics, Inc. to recover non-volatile deposition and automatically generate a complete drop size distribution in one computer run. These features should be implemented into the Data General and personal computer version of the code so that any significant extension to the present work would not be restricted.

For a copy of this report (No. 90342807-MTDC, February, 1990)

CONTACT: ROBERT EKBLAD (MT) (406) 329-3900







### EPA CONCLUDES PESTICIDES IN DRINKING WATER WELLS SURVEY

On February 19, 1990 the final sample was collected in EPA's National Survey of Pesticides in Drinking Water Wells. The two-year sampling effort concluded at a domestic well in Lincoln County, South Dakota. A joint project of EPA's Office of Drinking Water and Office of Pesticide Programs, the National Pesticide Survey (NPS) is one of the most comprehensive surveys ever undertaken.

Since April 1988, EPA sampled 566 community water system wells and 783 domestic wells--some in every State, including Alaska and Hawaii. These wells were statistically selected to represent the Nation's 13,000,000 domestic wells and 51,000 community water systems. The NPS sampling sites ranged from a domestic well with a rope and bucket to very sophisticated community water systems with hundreds of wells. The randomly selected wells took the sampling teams to such diverse locations as colleges, correctional institutions, trailer parks, military installations, retirement villages, and a convent.

The survey's goal is to develop national estimates of the frequency and concentration of pesticides in drinking water wells, and to examine the relationships among pesticide contamination, groundwater vulnerability, and pesticide use. EPA Headquarters staff worked closely with the U.S. Department of Agriculture and U.S. Geologic Survey on the effort. It is still too early to report final survey results, but for more information

**CONTACT:**            **NATIONAL PESTICIDE SURVEY**  
                          **OFFICE OF DRINKING WATER (WH-550)**  
                          **U.S. ENVIRONMENTAL PROTECTION AGENCY**  
                          **401 M STREET, S.W.**  
                          **WASHINGTON, D.C. 20406**

### VEGETATION TREATMENT ON BLM LANDS

The Bureau of Land Management recently released a Draft Environmental Impact Statement (DEIS) entitled "**Vegetation Treatment on BLM Lands in Thirteen Western States.**" The DEIS assesses the potential environmental consequences of implementing a vegetation treatment program to manage a variety of vegetation species on public land in Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, Oklahoma, eastern Oregon, South Dakota, Utah, Washington, and Wyoming.

Based on the issues and concerns identified during the public scoping process, the DEIS focuses its analysis in the following areas:

- How each treatment method affects vegetation on a Regional basis;
- How each method affects fish and wildlife and their habitats;
- How mechanical treatments and prescribed burning affect soils;
- How natural resources may be affected positively/negatively; and
- How herbicides and prescribed burning affect human health and safety.

The DEIS analyzes direct, indirect, and cumulative impacts to various resources. For a copy of the DEIS and to provide comments (due May 15)

**CONTACT:**            **WYOMING STATE DIRECTOR (BLM)**  
                          **C/O JIM MELTON, TEAM LEADER**  
                          **1701 EAST "E" STREET**  
                          **CASPER, WYOMING 82601**



**R-8 ADVERTISES FOR PESTICIDE SPECIALIST**

The Southern Region (R-8) recently announced plans to fill a pesticide specialist (GS-12/13) position in Atlanta, Georgia. The selected person will be responsible for: Providing technical leadership, training, and direction in the field of economic poisons and other chemicals used in forestry and forestry-related activities; providing expert advice, counsel, and technical assistance in pesticide use to Regional directors, forest supervisors, field offices, State foresters, industrial forest land managers, research, and other Federal agencies located throughout the thirteen southeastern States.

The selected person will also assist the Director of Forest Pest Management in planning, implementing, and developing standards and guidelines for the FPM program. He/she will also keep abreast of all pesticide developments in forestry, agriculture, and environmental research and assist in evaluating their application to the field of environmental improvement. Incumbent will develop and implement pest suppression/monitoring standards for evaluation of herbicide projects; act as Regional coordinator in obtaining registration of chemicals found effective for use in forestry and forestry-related work; review chemical-use proposals from 13 cooperating States that use Federal funds in their programs; and periodically evaluate the various cooperative forest pest management programs administered by the Region that involve pesticide use; and ensure Forest Service compliance with all applicable laws and regulations.

To apply for this position (No. R-8-176-90A)

**CONTACT:           USDA FOREST SERVICE  
                      1720 PEACHTREE RED., NEW, ROOM 776  
                      ATTN: PATSY SMITH  
                      (404) 347-2991**

**END**





CURT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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OBITUARY

Mark D. McGregor, retired Forest Service entomologist, died of a heart attack April 4, 1990. A memorial service was held April 7. As a Forest Service employee, Mark was keenly interested in western bark beetle evaluation and control. In recent years he was intimately involved with bark beetle pheromones. In fact, after his retirement from the Forest Service, Mark began work as the U.S. representative for Phero Tech, Inc. of Vancouver, British Columbia.

Mark was placing pheromone dispensers at the Couer d' Alene tree nursery when he was stricken. Cards of condolence may be sent to Mark's wife Jan at 1916-35th St., Missoula, Montana, 59801. In addition, a memorial fund in Mark's name with the Missoula County Search and Rescue Unit, has been established.

For additional information

CONTACT: TIMBER AND COOPERATIVE FORESTRY MANAGEMENT

TCFPM:R01A

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.



DDVP BACKGROUND STATEMENT FINALIZED

Labat-Anderson Inc., a contractor for the USDA Forest Service, recently completed and submitted to the agency a Pesticide Background Statement on DDVP or dichlorvos. DDVP is an organophosphate insecticide that is a contact and stomach poison. It also has some fumigant action. DDVP causes acetylcholinesterase inhibition in target pests. It is somewhat mobile in soils, but hydrolyzes rapidly and therefore has a relatively short half-life. DDVP is very toxic (oral LD<sub>50</sub> of 50 mg/kg in female rats), but is only mildly irritating to skin or eyes. It is a possible human carcinogen and is being further evaluated by the U.S. Environmental Protection Agency. DDVP is highly toxic to birds, honeybees, fish, and aquatic invertebrates.

DDVP is used to control many nuisance insects. The Forest Service uses about 17 grams per year for this purpose, as well as, in gypsy moth monitoring traps. For a copy of the full 28-page Background Statement

CONTACT: LARRY GROSS (WO)

(202) 453-9600

RISK ASSESSMENT SYMPOSIUM SCHEDULED

A symposium entitled "Access and Utilization of Information Resources in Assessing Health Risks from Chemical Exposure," has been scheduled for June 27-29, Oak Ridge, Tennessee. Planners for the symposium intend to focus on key aspects of the information needs for conducting chemical hazard assessments. In particular, the symposium will be concerned with how chemical hazard assessment can be improved with greater cost effectiveness and reliability through use of the best available information. The symposium should be of interest and benefit to all individuals involved in assessing the health risk of chemicals, including pesticides.

Presentations will be by invited speakers, who will provide reviews and identify existing resources, future directions, and needed research. Planned sessions will cover:

- Information resources;
- Procedures for conducting hazard assessments;
- Hazard assessments using chemical and biological data; and
- Application of toxicology information for establishing priorities for testing and hazard ranking.

Throughout the meeting, posters, displays, and work stations will be in place and participants will be available to explain the content, use, and application of the databases maintained by various Federal agencies.

The symposium is being sponsored by the U.S. Environmental Protection Agency's Office of Health and Environmental Assessment and the Oak Ridge National Laboratory, Health and Safety Research Division. A registration fee of \$100 is required. A block of rooms has been reserved at the Garden Plaza Hotel, Oak Ridge. For further information

CONTACT: DR. PO-UNG LU (TN)

(615) 574-7803





## SUMMARY OF AVAILABLE BACKGROUND STATEMENTS

The USDA Forest Service and USDI Bureau of Land Management have written a number of Background Statements for the pesticides they use in their pest management programs. These Background Statements include a description of the chemical and physical properties of the pesticide; a discussion of the results of laboratory animal studies that indicate how toxic the pesticide is and how it may affect humans, wildlife, aquatic species, and other nontarget organisms; and discussions about environmental fate.

### A. Published Background Statements:

1. Agriculture Handbook 633, Pesticide Background Statements, Volume I. Herbicides, 1984.

Contents: Amitrole, Atrazine, 2,4-D, 2,4-DP, Dalapon, Dicamba, Fosamine ammonium, Glyphosate, Hexazinone, Picloram, Simazine, and Triclopyr.

2. Agriculture Handbook 633, Pesticide Background Statements, Volume I. Herbicides (supplement), 1986.

Contents: Tebuthiuron.

3. Agriculture Handbook 661, Pesticide Background Statements, Volume II. Fungicides and Fumigants, 1986.

Contents: Benomyl, Captan, Chlorothalonil, Maneb, and Methyl bromide + Chloropicrin.

4. Agricultural Handbook 670, Pesticide Background Statements, Volume III. Nursery Pesticides, 1987.

Contents: Bifenox, DCPA, Diphenamid, Napropamide, Oxyfluorfen, Sethoxydim, Sulfometuron methyl, DCNA, Metalaxyl, Thiram, Triadimefon, Dazomet, 1,3-Dichloropropene, and Vorlex.

5. Agricultural Handbook 685, Pesticide Background Statements, Volume IV. Insecticides, 1989.

Contents: Acephate, Bacillus thuringiensis, Carbaryl, and Diflubenzuron.

6. Agricultural Handbook, Pesticide Background Statements, Volume V. Seed Orchard Insecticides (in preparation).

Contents: Azinphos-methyl, Carbofuran, Chlorpyrifos, Diazinon, Dimethoate, Esfenvalerate, Lindane, and Permethrin.



## B. Unpublished Background Statements:

Aluminum phosphide  
 Asulam  
 Barrot  
 Basic Copper Sulfate  
 Bromacil  
 Cacodylic Acid  
 Chlorsulfuron  
 Clopyralid  
 Dichloros (DDVP)  
 Dicofol  
 Diesel oil and Kerosene  
 Diuron  
 Dodine  
 Ethazole  
 Fenbutatin Oxide  
 Imazapyr  
 Limonene  
 Mexacarbate  
 Mefluidide  
 Metsulfuron-methyl  
 Mineral oil  
 MSMA  
 Permethrin  
 Potassium Salts of Fatty Acids  
 Strychnine  
 Vinclozolin

All Background Statements are available from

CONTACT: Forest Pest Management  
 USDA Forest Service  
 P.O. Box 96090  
 Washington, DC 20090-6090

### 1990 GYPSY MOTH TREATMENTS BEGIN

In an effort to eradicate the gypsy moth (Lymantria dispar) from areas outside the "generally infested area," North Carolina has begun treatments in Bert, Halifax, and Northam Counties. The State has 8,400 acres to treat with two applications of the biological insecticide Bacillus thuringiensis (Bt). To date, about 50 percent of the first application has been completed.

In related gypsy moth eradication efforts, Virginia plans to begin spraying April 23, 1990.

For additional information on the North Carolina treatments

CONTACT: T. CHIATAKIS (NC) (919) 733-6930





SUMMARY OF ENVIRONMENTAL IMPACT STATEMENTS WITH RISK ASSESSMENTS  
OR RISK ASSESSMENTS ALONE

The following Environmental Impact Statements (EISs) contain human health risk assessments. The EISs evaluate: The toxicity of the pesticides being considered; the exposure to the pesticides; and the resulting risk to human health from potential exposure.

**REGION 1.** Report 88-9, Human Health Risk Assessment for Herbicide Applications to Control Noxious Weeds and Poisonous Plants in the Northern Region, 1988.

Herbicides: Amitrole, Atrazine, 2,4-D, Dicamba, Glyphosate, Hexazinone, Picloram, and Tebuthiuron.

Available from:       Regional Forester  
                           USDA Forest Service  
                           P. O. Box 7669  
                           Missoula, Montana, 59807

**REGION 4.** Final Environmental Impact Statement; Intermountain Region Noxious Weed and Poisonous Plant Control Program, 1986.

Herbicides: Amitrole, Atrazine, 2,4-D, Dicamba, Glyphosate, Hexazinone, Picloram, and Tebuthiuron.

Available from:       Regional Forester  
                           USDA Forest Service  
                           324 25th Street  
                           Ogden, Utah, 84401

**REGION 5.** Final Environmental Impact Statement: Vegetation Management for Reforestation, 1988.

Herbicides: Asulam, Atrazine, 2,4-D, Dalapon, Dicamba, Fosamine ammonium, Glyphosate, Hexazinone, Picloram, Simazine, and Triclopyr.

Available from:       Regional Forester  
                           USDA Forest Service  
                           630 Sansome St.  
                           San Francisco, California, 94111

**REGION 6.** Final Environmental Impact Statement: Managing Competing and Unwanted Vegetation, 1988.

Herbicides: Amitrole, Asulam, Atrazine, Bromacil, 2,4-D, 2,4-DP, Dalapon, Dicamba, Diuron, Fosamine ammonium, Glyphosate, Hexazinone, Picloram, Simazine, Tebuthiuron, and Triclopyr.

Carriers: Diesel Oil and Kerosene.

Available from:       Regional Forester  
                           USDA Forest Service  
                           P.O. Box 3623  
                           Portland, Oregon, 97208



Document: Final Environmental Impact Statement: Nursery Pest Management, 1989.

Herbicides: Bifenox, DCPA, Dicamba, Difenamid, Glyphosate, and Oxyflurfen.  
 Fungicides: Benomyl, Captan, Chlorothalonil, DCNA, and Metalaxyl.  
 Insecticides: Acephate, Carbaryl, Chlorpyrifos, Fenvalerate, and Malathion.  
 Fumigants: Dazomet, Methyl isocyanide, and Chloropicrin.

Available from: Regional Forester  
 USDA Forest Service  
 P.O. Box 3623  
 Portland, Oregon, 97208

Document: Final Environmental Impact Statement: Management of Western Spruce Budworm in Oregon and Washington, 1989.

Insecticides: Acephate, Bacillus thuringiensis, Carbaryl, and Malathion.  
 Carriers: Diesel Oil and Kerosene.

Available from: Regional Forester  
 USDA Forest Service  
 P.O. Box 3623  
 Portland, Oregon 97208

Region 8. Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle, Southern Region, 1987.

Insecticides: Chlorpyrifos and Lindane.

Available from: Regional Forester  
 USDA Forest Service  
 1720 Peachtree St.  
 Atlanta, Georgia 30367

Document: Final Environmental Impact Statement: Vegetation Management in the Coastal Plain/Piedmont, 1989.

Herbicides: 2,4-D, 2,4-DP, Dicamba, Fosamine Ammonium, Glyphosate, Hexazinone, Imazapyr, Picloram, Sulfometuron-methyl, Tebuthiuron, and Triclopyr.  
 Carrier: Light Fuel Oil

Available from: Regional Forester  
 USDA Forest Service  
 1720 Peachtree St.  
 Atlanta, Georgia 30367

Document: Final Environmental Impact Statement: Vegetation Management in the Appalachian Mountains, 1989.

Herbicides: 2,4-D, 2,4-DP, Dicamba, Fosamine ammonium, Glyphosate, Hexazinone, Imazapyr, Picloram, Sulfometuron-methyl, Tebuthiuron, and Triclopyr.  
 Carriers: Diesel Oil, Kerosene, and Mineral Oil.  
 Additive: Limonene.

Available from: Regional Forester  
 USDA Forest Service  
 1720 Peachtree St.  
 Atlanta, Georgia 30367





Document: Final Environmental Impact Statement: Vegetation Management in the Omark/Osage Mountain Area.

Herbicides: Epsalim, glyphosate, Hexazinone, Imazapyn, Picloram, Sulfometuron-methyl, and Trifluralin.

Carrier: Diesel Oil, Kerosene, and Mineral Oil.

Additive: Limonene.

Available from: Regional Forester  
USDA Forest Service  
1720 Peachtree St.  
Atlanta, Georgia 30367

Northeastern Area. Final Environmental Impact Statement for the Appalachian Integrated Pest Management (AIPM) Gypsy Moth Demonstration Program, 1989.

Insecticide: Diflubenzuron.

Available from: Area Director  
USDA Forest Service  
100 Matsonford Rd. Suite 200  
Radnor, Pennsylvania 19087

Washington Office. Final Environmental Impact Statement: Gypsy Moth Suppression and Eradication Projects, 1984. Final Environmental Impact Statement as Supplemented, 1985. Final Addendum to the Final Environmental Impact Statement as Supplemented, 1985.

Insecticides: Acephate, Carbaryl, Diflubenzuron, and Trichlorfon

Availability: Out of print.

Document: Human Health Risk Assessment for the Use of Pesticides in USDA Forest Service Nurseries, 1987, FS-412.

Herbicides: Atrazine, Bifenox, 2,4-D, DCPA, Dicamba, Diphenamide, Glyphosate, Napropamide, Oxyfluorfen, Sethoxydim, and Simazine.

Fungicides: Benomyl, Captan, Chlorothalonil, DCNA, Metalaxyl, Maneb, Thiram, and Triadimefon.

Insecticides: Carbaryl, Chlorpyrifos, Diazinon, Dimethoate, and Fenvalerate

Fumigants: Dazomet, 1,3 Dichloropropene, Methyl bromide + Chloropicrin, and Vorlex.

Available from: Director  
Forest Pest Management  
USDA Forest Service  
P.O. Box 96090  
Washington, DC 20090-6090



Animal and Plant Health Inspection Service. Final Environmental Impact Statement, Rangeland Grasshopper Cooperative Management Program, 1987.

Insecticides: Acephate, Car. Arvl, and Malathion.

Carriers: Diesel Oil, and Petroleum Oil.

Available from: Administrator  
USDA Animal and Plant Health Inspection Service  
Washington, DC 20250

Bureau of Land Management. Final Environmental Impact Statement Northwest Area Noxious Weed Control Program, 1985, Supplement to the Northwest Area Noxious Weed Control Program, 1987.

Herbicides: Dicamba, 2,4-D, Glyphosate, and Picloram.

Available from: State Director  
Oregon State Office  
P.O. Box 2965  
Portland, Oregon 97208

Document: Final Environmental Impact Statement, Western Oregon Program-Management of Competing Vegetation, 1989.

Herbicides: Asulam, Atrazine, 2,4-D, Dicamba, Diuron, Fosamine ammonium, Glyphosate, Hexazinone, Picloram, and Triclopyr.

Available from: State Director  
Oregon State Office  
P.O. Box 2965  
Portland, Oregon 97208

Document: Final Environmental Impact Statement, California Vegetation Management, 1988.

Herbicides: Amitrole, Asulam, Atrazine, Bromical, 2,4-D, 2,4-DP, Dalapon, Dicamba, Diuron, Fosamine ammonium, Glyphosate, Hexazinone, Picloram, Simazine, Tebuthiuron, and Triclopyr.

Available from: California State Director  
California State Office  
2800 Cottage Way  
Sacramento, California 95825





CALL FOR PAPERS**Society of Environmental Toxicology and Chemistry (SETAC)**

The Eleventh Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC) will be held November 12-15, 1990 at the Hyatt Regency Crystal City, Arlington, Virginia.

The theme of the meeting is "Global Environmental Issues: Challenge for the 90's." Special topics to be covered at the symposium include:

- **Global and Regional Issues:**
  - Impact of Global Warming
  - International Environmental Legislation
  - Global Effects of Air Pollutants
  - Forest Health Issues
  - Risk Communication
  - Ecological Assessment
  - Impact of Pollution on Coastal Waterways
- **Environmental Chemistry:**
  - Environmental Fate of Chemicals
  - Aquatic Environmental Chemistry
  - Modeling Fate
- **Environmental Toxicology:**
  - Bioindicators
  - Behavioral Toxicology
  - Good Laboratory Practices
- **Aquatic Toxicology:**
  - Methods of Aquatic Toxicology
  - Sediment Contamination
  - Comparative Toxicity in Aquatic Systems
- **Wildlife Toxicology:**
  - Wildlife toxicology
  - Avian Toxicology
- **Terrestrial Toxicology and Fate in the Environment:**
  - Adsorption/Desorption
  - Assessing Groundwater Contamination
  - Pesticide Exposure

A deadline of May 1, 1990 has been established for the submission of abstracts.

For additional information

CONTACT: R. WENTSEL (PRG. CHAIR)

(301) 671-2036

END



SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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SWATH KIT TRAINING COURSE HELD

The Northeast Forest Aerial Application Technology Group (NEFAAT) recently held a Swath Kit training course for State and Federal users in State College, Pennsylvania. Swath Kits are portable image analyzers and weather stations. They were developed by Jon Bryant (formerly of Penn State University) under a cooperative agreement with the USDA Forest Service. The kits are used to characterize spray aircraft used in forest spraying contracts. The Forest Service has purchased six Kits to date.

The course focused on using the equipment, but also reviewed basic meteorological and droplet behavior theory and aircraft characterization procedures. Participants used the Kits to perform three main tasks: weather monitoring and recording, reading spray cards, and modeling aircraft swath patterns. Instructors were Jon Bryant, Karl Mierzejewski, and Amy Creighton.

For additional information on future Swath Kit training opportunities

CONTACT: KARL MIERZEJEWSKI (PA)      (814) 865-1021

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.





PACIFIC NORTHWEST REGIONAL GUIDE TO VEGETATION MANAGEMENT RELEASED

The Forest Pest Management Planning Group in Portland, Oregon, has released "A Guide for Conducting Vegetation Management Projects in the Pacific Northwest Region." This publication provides planning and implementation guidance for projects based on the Region's final environmental impact statement (FEIS) for "Managing Competing and Unwanted Vegetation." It also includes the provisions of the subsequent Regional Mediated Agreement that brought successful closure to the long-standing dispute over herbicide use on the National Forests in Oregon and Washington. The Guide meets the needs of field personnel in the Region in several ways. It:

- extracts direction and concepts from the FEIS, Record of Decision, Mediated Agreement, NEPA, and ties them together based on project-related subjects;
- refers the reader to the location of further detailed discussions on these topics in the original documents;
- explains concepts such as Integrated Pest Management for vegetation management; and
- provides examples, from all resource areas, to illustrate how direction and concepts can be applied.

The Guide has six chapters: site-specific environmental analyses; public involvement; worker health; working with cooperators; monitoring; and information. Each discusses a topic area with new direction and concepts from the Regional FEIS.

The Guide is designed to be periodically updated with new information and improvements based on suggestions from users.

For further information and to request copies of "A Guide to Conducting Vegetation Management Projects in the Pacific Northwest Region,"

CONTACT: MIKE FERRIS (OR)

(503) 326-7700 / FTS 423-7700

FARM BILL 1990

Two House Agriculture Committee members recently added language to the Research section of the 1990 Farm Bill that would strengthen USDA's pesticide monitoring program and authorize funding of farm safety research.

For more information

CONTACT: YOUR LEGISLATIVE AFFAIRS STAFF



CALL FOR PAPERS

## American Society Agricultural Engineers (ASAE)

The ASAE Pest Control and Fertilizer Application Committee has planned two technical sessions for the 1990 International Winter Meeting, December 18-21, in Chicago, Illinois. The theme for the two technical sessions and the names of the corresponding session organizers are given below:

## 1. Risk Assessment Regarding Pesticide Application Technology.

Session Organizer: Palaniappa Krishnan, Univ. of Delaware, Ag. Engineering Depart., Newark, DE 19717-1303.

Phone # (302) 451-2468

Fax # (302) 292-3651

## 2. Pesticide &amp; Fertilizer Application Technology.

Session Organizer: Stephen L. Pearson, Spraying Systems Co., North Avenue at Schmale Road, Wheaton, IL 60188.

Phone # (708) 665-5000

FAX # (01-708-260-0842

For further information

CONTACT: PALANIAPPA KRISHNAN (DE)

(320) 451-2468

REPORTING PESTICIDE USE IN CALIFORNIA

Under new regulations effective January 1, Californians must report all pesticide use to their county agricultural commissioners. The regulations, which apply to agricultural crop producers, also apply to pesticides used on golf courses, parks, cemeteries, rights-of-way, and ditchbanks, as well as to pesticide treatments to forests. The aim, according to California's Department of Food and Agriculture (CDFA), is to gather enough information to allow regulators to assess risks more realistically. In the past, regulators estimated the risk of pesticide use by assuming that every pesticide registered for a particular crop was applied to that crop at the maximum rates and at the maximum number of applications allowed. Each time another pesticide was registered, the theoretical "risk" increased.

While it is doubtful all pesticides registered for use on a particular crop are actually used on it, there has been little data to support any other assumption. Armed with information about actual pesticide use, however, regulatory agencies will be better able to assess human health risks, evaluate pesticide effects on endangered species, and track pesticide use in areas of known groundwater contamination. Under a related law, CDFA also will double its priority pesticide residue monitoring program, which monitors pesticides of special health interest.

For more information





CONTACT: NICK SURJAN (CA)

(916) 322-5032



### TRANSGENIC WALNUTS

Scientists seeking to stack the deck in a reshuffling of the genetic hand that is normally dealt by Mother Nature to commercial crops (like walnuts) will soon launch a transgenic field test in Davis, California. Researchers who have managed to deal a new gene off the bottom of the DNA deck and insert the beneficial genetic information into walnut trees recently received approval from Federal officials to plant 100 of the 10-inch tall trees outdoors at UC Davis.

The scientific sleight-of-hand has produced the first generation of English walnut trees that contain a non-plant gene that may help the trees resist insects that cost producers up to \$47 million annually in crop damage and control expenses. It is hoped that the field test, which will begin this spring, will lead to significant reductions in the use of pesticides and help scientists harvest vital new information about the development of hearty new plant varieties using genes transplanted from microscopic organisms.

Although the study will not be completed until the trees grow to be at least 5 years old, the research project may some day have a major impact on efforts to control pests like the codling moth, naval orange worm, and others.

For additional information

CONTACT: UNIVERSITY OF CALIFORNIA, DAVIS, CA.

### SPIDERS AND SPITBALLS

Nearly every child knows the verse "Will you walk into my parlor?" said the spider to the fly." Now there is evidence that some spiders go to great lengths to welcome insects by decorating their "parlors" with spitballs in a way that actually attracts unsuspecting visitors.

Last summer several evolutionary ecologists analyzed the spectral properties of silks from the webs of several species of spiders. They found that many silks, especially the whitish "globs" or "spitballs" that hang near the center of webs, are not the marks of shoddy workmanship, but are sophisticated ultraviolet reflectors. Certain spiders are sneaky and decorate their webs with these globs to reflect ultraviolet light, and attract prey.

According to the researchers, insects use their ability to see ultraviolet (UV) light to find food sources in flowers. Spiders, like the common garden spider use this behavior to their advantage, taking great pains to place UV reflectors near the center of their snares. The insects are often fooled into thinking an ordinary web is a flower, but by the time they discover their error, it is too late. Could this be researched and used to advantage in alternative pest management strategies?

For additional information

CONTACT: GARY BERNARD, WHO IS CURRENTLY WITH BOEING AIRCRAFT, SEATTLE, WA





### INSIGHTS ON CURRENT PESTICIDE ISSUES

In a recent issue of **INSIGHT** magazine (April, 1990) the following pesticide issues were reviewed and may be of interest to pesticide users.

**Wasp Weapon Set to Fight Lyme Disease:** Scientists plan to re-enact a 1920s biological control experiment to combat dog ticks, but this time the goal is to eradicate deer ticks that transmit Lyme disease, an acute inflammatory illness spread by ticks to humans. On the island of Martha's Vineyard, off the coast of Massachusetts, a team of entomologists from the University of Massachusetts at Amherst plans to release a controlled population of chalcid wasp parasites, which are known to deposit their eggs in ticks. The eggs hatch and produce immature wasp larvae that devour the ticks from the inside. In other words, ticks parasitized by the wasps will not survive to adulthood or develop the ability to reproduce.

By gradually eliminating the population of infected ticks, which pick up the spirochaete responsible for Lyme disease while feeding on mice as they are maturing, the researchers hope to reduce the incidence of the disease. The entomologists also say that using wasps for control may prove to be more cost-effective and successful than using insecticides.

The project will take place over three years, with the first release of wasps scheduled for summer 1991. But, due to the tick's life cycle, at least one year must pass before any impact can be gauged. The experiment is somewhat of a long shot, but if it succeeds, it may be tried in other areas of the country plagued by Lyme disease.

**Malathion Madness:** Spraying malathion to beat back an infestation of Mediterranean fruit flies in Southern California has spurred a number of lawsuits charging that the insecticide is dangerous to humans. One such suit, filed on behalf of homeless people allegedly made sick by the medfly spray, charged that they were particularly threatened by the spraying because they could not return home when it began and could not change their contaminated clothing. The class-action suit was filed on behalf of the homeless by the Legal Aid Society of Orange County, California.

Last month a Federal judge denied Legal Aid's request for a preliminary injunction seeking more shelter for the homeless or an end to the spraying, ruling that the group had not provided medical evidence that malathion causes the symptoms described in the suit, which included blurred vision, difficult breathing, bizarre dreams, and loss of appetite. The day after the judge's ruling, the State agreed to provide more beds for the homeless. The society plans to drop its suit.



### BIOPESTICIDE PRODUCERS CONCERNED OVER PATENT PROTECTION

In an article by Ann M. Thayer, C&EN News (1989), markets for bio-engineered products look promising, but companies are hesitating to invest in production without secure patent protection. With precedents for patenting plants, animals, and micro-organisms now established, many companies are working toward expanding into markets with products based on bio-engineered organisms. One example is the pesticide industry. Growing concerns about chemicals in the environment and increasing resistance of insects to chemical pesticides are spurring companies to consider other options. But, since the scope and strength of patents on living organisms has yet to be tested, industry is cautious about investing in production.

In 1987, the worldwide market for pesticides reached nearly \$17 billion, according to the National Agricultural Chemicals Association (NACA). Other industry sources say it is now approaching \$20 billion. Herbicides and insecticides account for the largest percentage of sales, about 42% and 32% in 1987, respectively. Biopesticides--usually highly specific plant and insect toxins from naturally-occurring or genetically engineered micro-organisms--are currently less than 1% of the total market but could reach \$6-8 billion in worldwide sales by the year 2000.

As environmental and regulatory restrictions grow, and the market matures, many major producers of chemical pesticides have begun research and development efforts on biopesticides and chemical or pest-resistant plants. Smaller start-up companies, such as Ecogen, Mycogen, and the recently merged Calgene and Plant Genetics, have based their entire businesses on genetically engineered organisms. Thus, time and money have become significant factors. Whereas, it can take an average of nine years at an average cost of \$50-70 million to bring a new chemical pesticide to market, NACA says, commercialization of a biopesticide can take only three to five years and a few million dollars.

Science and politics have combined to make biopesticides potentially a big business; however, this expanding technological capability is expensive. Thus, there is concern about the ability of our existing patent system to protect the products of biotechnology. Until secure patents are in hand, investors and management will most likely hesitate to finance expenditures and many companies will wait to build production facilities.

### NOVO TO LOCATE A BIOPESTICIDE LABORATORY IN DAVIS, CA

Unlike the companies mentioned above, Novo Nordisk recently announced plans to establish a research and development (R&D) center in Davis, California. The new subsidiary, Entotech, Inc., will focus on biopesticide products for agriculture and forestry. Pamela Marrone, president of Entotech announced that operations will commence July 1, 1990. Thirty employees will eventually occupy the 17,400 square foot facility.

For additional information

CONTACT: JACK BARRY (CA)

DATA GENERAL: J.BARRY:SCS06







## EARTH DAY 1990

As reported in an earlier issue of "Short Subjects...", Earth Day 1990 will be celebrated around the country April 22. The first Earth Day, April 22, 1970, gave rise to an environmental movement that expanded to the far corners of the earth. People began thinking and acting on issues of environmental degradation. As our population explodes, resulting in destruction of natural resources and pollution, major and irreversible changes to the earth may occur unless global earth consciousness takes place.

Earth Day 1990 is an opportunity for everyone to make a commitment to caring for our planet before it is too late. Therefore, you might want to consider taking the following "green pledge,"

BECAUSE...our planet today faces severe environmental crises such as global warming, rain forest devastation, growing world population, and water and air pollution...and

BECAUSE...the planet's future depends on the commitment of every nation, as well as every individual...

I pledge to do my share in saving the planet by letting my concern for the environment shape how I:

**Act:** I pledge to do my utmost to recycle, conserve energy, save water, use efficient transportation, and try to adopt a lifestyle as if every day were Earth Day.

**Purchase:** I pledge to buy and use only those products and strategies least harmful to the environment.

**Vote:** I pledge to support those persons who demonstrate an abiding concern for the environment.

**Support:** I pledge to support the passage of local, State, and Federal laws and international treaties that protect the environment.

**EARTH DAY 1990--APRIL 22!**

### THE FOREST SERVICE AND THE ENVIRONMENT

As the Forest Service marks the 20th anniversary of Earth Day, the employees of the agency prepare for the 100th anniversary of the founding of the National Forest System. At this important time, the Forest Service is rededicating itself to maintaining a quality environment and developing new perspectives for managing America's forest and range resources.

We recognize that we can only have a quality environment in our forests and grasslands if we:

- Maintain a wide array of plants and animals in a healthy condition;
- Manage the use of resources so that they will be available forever, and



-Preserve the quality of water, both on the surface and in the ground.

The Forest Service's new management strategies will bring environmental quality into a better balance with the economic demands on natural resources. The challenge will be to manage the land in an environmentally sensitive manner while producing:

- Public benefits such as high-quality water, fish and wildlife habitat, recreational opportunities, grazing, timber, and minerals;
- Wages for workers in natural resource-related industries; and
- A profit for the businesses that depend on these resources.

As the Forest Service approaches the 21st Century and the 100th anniversary of NFS, it plans to contribute to a quality environment in our nation's forest and range resources in three major ways:

- By managing the Nation's 191 million acres of National Forest System land;
- By working with State foresters to promote wise use of natural resources;
- By conducting quality forestry research.

Our growing population and increasing need to use the resources of our National Forests and Grasslands wisely, often creates conflicting demands. The employees of the Forest Service must work closely with all citizens to resolve these conflicts and come up with workable plans for the management of natural resources.

For more information on how the agency intends to do this

**CONTACT: ANY REGION, STATION, OR AREA PUBLIC AFFAIRS OFFICE**

**END**





SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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SLIDE SET TO BE MADE AVAILABLE

At the suggestion of aerial application specialist, Jack Barry, WO-FPM has decided to update the data in Forest Service publication FS-406, "Controlling Pests: When, Where, and How the USDA Forest Service Uses Pesticides." The update will be in way of a set of 20 to 30, 35mm slides that summarize 5- (1985-1989) and 10-year (1979-1989) patterns of use of pesticides on National Forest System lands. To gauge how many sets of slides should be produced, pesticide coordinators are asked to notify the WO of their needs for the slide set. The slide set should be used in conjunction with the information in the revised version of FS-406. (April, 1989), which covers 1978-1988 and 1984-1988.

The slide set will be designed by WO-FPM and produced in R-8. To have your office placed on a list of recipients of the slide set

CONTACT: DENNIS R. HAMEL

(202) 453-9600

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090, Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.



### NAPIAP PROJECTS FUNDED

Forest Service funds for conducting new projects under the auspices of the National Agricultural Impact Assessment Program (NAPIAP) are currently being distributed by the Washington Office. The following projects were evaluated by a multi-disciplinary team using predetermined evaluation criteria and they were selected for funding in 1990.

TITLE	RESEARCHER(S)	EXPECTED COMPLETION DATE
Tall Larkspur Control on High Elevation Rangelands	J. Evans, M. Ralphs D. Neilsen, L. James and G. Baxter (R-4-16)	1991
Aerial Application of diflubenzuron (Dimilin) to Deciduous Forests	R. Reardon, W. Yendol, W. McLane, and T. Roland (NA-14)	1990
Laboratory and Field Toxicity Testing of Forest Pesticides on Non-Target Aquatic Invertebrates	D. Behmer, D. Kreutzweiser, and S. Holmes (NA-16 and FPMI, Canada)	1990
In-Vitro Evaluation of Genotoxicity of Forest Herbicides and in Human Lymphocytes	V.F. Garry (NC-21)	1991
The Effect of Site Moisture Conditions on the Fate of Two Forms of Hexazinone in Stands of <u>Vaccinium globulare</u>	N. Stark, D. Essig, and J. Lyon (INT-14)	1990
Field Efficacy Data Collection for Continued Registration of ORCO Boomer-Rid Mountain Beaver ( <u>Aplodontia rufa</u> ) Bait	D. Campbell, J. Evans, and D. Pederson (PNW-35)	1990
Relationship of Drop Size, Volume per Acre, and Surfactant to Efficiency of Certain Herbicides	M. Newton, L. Norris, R. Cavaletto, J. Barry (PNW-38)	1992
Forest Herbicides and and Wildfires	C. McMahon (SO-32)	1990

It is expected that the results of these data gap collection efforts will help maintain the future registrations of appropriate products for use in forestry.

CONTACT: ZDENKA HORAKOVA

(202) 453-9600





INFORMATION AVAILABLE THROUGH EPA

What follows is a summary of some of the kinds of information available through the U.S. Environmental Protection Agency (EPA):

**FACT SHEETS:** Publications that include descriptions of the chemical use patterns and formulations, scientific findings, a summary of the Agency's regulatory position/rationale, and a summary of major data gaps.

**CONTACT:** Jackie Bishop (703) 557-4474  
Registration Support and Emergency  
Response Branch  
Registration Division (TS-767C)  
Office of Pesticide Programs  
Environmental Protection Agency  
401 M Street, SW  
Washington, D.C. 20460

**REGISTRATION STANDARDS:** A listing of the conditions which registrants must meet in order to reregister pesticide products. Examples include: requirements for submission of needed scientific data; compliance with product composition statements, labeling and packaging requirements; and an obligation to compensate other registrants for use of applicable safety data.

**CONTACT:** Jackie Bishop (703) 557-4474  
Registration Support and Emergency  
Response Branch  
Registration Division (TS-767c)  
Office of Pesticide Programs  
Environmental Protection Agency  
401 M Street, SW  
Washington, D.C. 20460

**SPECIAL REVIEW NOTICES:** Announcements of the beginnings of a Special Review, which is an assessment of risks and benefits of a pesticide that shows evidence of posing a potential safety problem. Environmentalists, manufacturers, users, scientists, and the general public can participate.

**CONTACT:** Registration Support and Emergency Response Branch  
Registration Division (TS-767C)  
Office of Pesticide Programs  
Environmental Protection Agency  
401 M Street, SW  
Washington, D.C. 20460

**SUSPENDED, CANCELLED, AND RESTRICTED-USE PESTICIDES:** A summary and clarification of pesticides which have been either suspended, cancelled, or have been designated for restricted-use.

**CONTACT:** Office of Pesticides and Toxic Substances  
Office of Compliance Monitoring (EN-342)  
Environmental Protection Agency  
401 M Street, SW  
Washington, D.C. 20460



**RESTRICTED-USE PESTICIDE UPDATE:** An updated list of Federally registered products which have been classified for restricted-use. A pesticide classified for restricted-use is to be used only by, or under the direct supervision of a certified applicator.

**CONTACT:** Mark Dow (703) 557-4354  
Registration Support and Emergency Response Branch  
Registration Division (TS-767C)  
Office of Pesticide Programs  
Environmental Protection Agency  
401 M Street, SW  
Washington, D.C. 20460

**PRESS RELEASES:** Various public notifications regarding Agency policy, goals, and activities.

**CONTACT:** Office of Public Affairs (A-107)  
Environmental Protection Agency  
401 M Street, SW  
Washington, D.C. 20460

**PUBLIC DOCKET:** Public comments in response to Federal Register notifications. Data submitted in response to registration standards, data call-ins, etc. (unless classified as Confidential Business Information (CBI)). The docket is also available to the public between the hours of 8:00 am to 4:00 pm, Monday through Friday, excluding legal holidays.

Other information, e.g., questions about specific pesticides, may be obtained by calling the EPA Locator, advising them of your interest and obtaining an appropriate name and number for followup

**CONTACT:** EPA LOCATOR (DC) (202) 382-2090

#### GENETIC ENGINEERING WITH BT

Texas cotton is about to undergo the first large-scale field tests of plants genetically modified to contain genes of Bacillus thuringiensis (Bt). Laboratory tests have indicated that Bt-producing cotton and other crops can resist devastating attacks by the larvae of certain lepidopterous defoliators.

While cotton is susceptible to harmless attacks by many insects, growers go to great lengths to protect it from more damaging pests. Fully half the total amount of insecticides used annually in the U.S. is applied to cotton.

Agriculture scientists will consider the Bt-producing cotton successful if it significantly reduces production costs. If successful, this technology may also be useful for other pest management systems, e.g., forestry.

For followup

**CONTACT:** DAVID ALTMAN TEXAS A&M UNIVERSITY





### MALUNYIA DUBBED "DRUG BUG"

According to **NBC News** and the **Washington Post** (February 21), after years of despair over South America's burgeoning coca crop, the Bush administration is studying a new option: unleashing insects into Andean jungles to devour coca shrubs--the raw material for cocaine.

At the urging of National Drug Control Director William J. Bennett, the administration recently quadrupled, to \$6.5 million, the budget for a USDA Research program to develop chemical and biological control alternatives for the destruction of drug crops.

Officials said the funds will be used for a variety of exotic projects, including testing control of coca plants with the coca moth or malunzia (Eloria noyesii). In this case, the intent will be to research the malunzia, a white moth that, in its caterpillar stage feeds on coca plants, as a potential bio-control agent. Researchers believe that if they can breed malunzia larvae in mass quantities they can be air dropped over the coca-growing regions of South America. Of course, this would only be attempted given the consent of the foreign governments involved.

As a general rule, U.S. officials say, the introduction of bio-control agents such as the malunzia--particularly if they are indigenous to the area of import--are considered less environmentally hazardous than other techniques such as spraying with herbicides (e.g., tebuthiuron (Spike)), which the U.S. once planned to use against coca crops. Unfortunately, there has been little study of the malunzia as a bio-control agent. Its impact on the environment may be less than conventional control agents, but at this point it is not possible to know the consequences of introducing malunzia on a mass scale. Of particular concern are the potential impacts of malunzia on non-target plants after the larvae have decimated the coca crops. Another concern is the economic impact on the coca growers.

These and other questions are still unanswered, thus the stepped-up effort to evaluate malunzia as a "drug bug."

### GENE-ALTERED MOSQUITOES: A NEW RESEARCH TOOL?

With so much attention focused nowadays on gene-altered mice--the promising new research tool of modern genetics--it seems few researchers remember the lowly fruit fly, which for decades has bared its genes to inquiring biologists.

That the scientific spotlight has wandered somewhat from these insects may appear justified at first. After all, the attention geneticists lavished upon fruit flies had more to do with its rapid reproductive rate and ease of handling than with its relevance to human health. But as geneticists leaped from fruit fly to mouse, did they overlook another six-legged candidate? Might the fruit fly's close cousin, the mosquito (Order Diptera), deserve more scrutiny from molecular biologists? To learn more about the possibilities of moving research from mice to mosquitoes see



### PESTICIDES IN THE NEXT DECADE: THE CHALLENGES AHEAD

The Third National Pesticide Research Conference entitled "Pesticides in the Next Decade: The Challenges Ahead" will be held November 8-9, 1990 in Richmond, Virginia. The Virginia Water Resources Research Center, Virginia Polytechnic Institute and State University, is soliciting abstracts for this national research conference. Abstracts (due May 1) will be reviewed by a Steering Committee, and prospective speakers will be notified of acceptance by May 18.

Topics of interest include (but are not limited to):

- Pesticide monitoring in soil, air, and water;
- Environmental fate and modeling studies;
- Risk assessment methods and applications;
- Bioaccumulation of pesticides;
- Chemical and analytical methodology;
- Implications of the 1990 Farm Bill;
- Waste disposal techniques for pesticides;
- Controlling non-point source pollution by pesticides;
- Pesticides in drinking water and food;
- Alternatives to pesticides;
- Effects of State/Federal regulations/policies on pesticide use;
- Pesticides in wastewater and sewage sludges;
- Economic analysis of pollution prevention, control, and cleanup;
- Case studies of pesticide pollution and solutions;
- Society's role in evolving pesticide-use policy;
- Innovative programs/policies;
- Non-specificity of pesticides;
- Economic incentives to modify current practices;
- Acceptable pesticide disposal procedures;
- Public perception, understanding, and acceptance.

Abstracts of 300-500 words should be mailed by May 1, 1990 to:

Ms. Diana L. Weigmann, Assistant Director of Research/Administration  
Virginia Water Resources Research Center  
Virginia Polytechnic Institute and State University  
617 North Main Street  
Blacksburg, VA 24060-3397 or

CONTACT: MS. WEIGMANN (VA)

(703) 231-5624

### NATIONAL VEGETATION MANAGEMENT STEERING COMMITTEE MEETS

The National Vegetation Management Steering Committee met March 7-8 in Sacramento, California. The meeting focused on needs for aerial application of herbicides; however, the committee will be recommending to the Chief that the committee's charter be expanded to include all methods of vegetation management and that the committee's membership be expanded to support the proposed expanded charter. A draft of the Committee's report is available:

CONTACT: JACK BARRY (CA)

(916) 758-4600







### CHANGES IN THE RANKS IN REGION 8

Harold W. Flake, former Field Representative, Asheville Field Office, has accepted the position of Regional Aerial Applications Specialist and Forest Health Coordinator in Atlanta, Georgia. He will report on March 25.

In his new position, Harold will divide his time between aerial application and implementation of the forest health program. He will have Regionwide responsibility for providing direction and technical leadership in the evaluation and implementation of aerial application strategies for management of insects, diseases, and vegetation. The position will also have responsibility for providing technical leadership, direction, planning and, evaluation for the Region's Forest Health Plan.

Prior to being Field Representative in Asheville, Harold worked in various assignments in the Pacific Southwest Forest Experiment Station and in Regions 1, 3 and 4.

For followup

CONTACT: HARVEY TOKO (GA)

(404) 257-2961

### PESTICIDE-RESISTANT POPLARS PRODUCED

Scientists with the U.S.D.A. Forestry Sciences Laboratory in Rhinelander, WI say they have genetically engineered a tree for the first time. This should allow for modification of seedlings instead of having to delay the procedure for 15 to 20 years, waiting for the trees to flower and making genetic changes at that time.

The Rhinelander scientists recently altered young poplars by inserting a mutant Salmonella sp. into poplar plant tissue. The bacterial organism is used to make the trees resistant to damage from pesticides (e.g., glyphosate=Roundup) commonly applied to the trees but which can kill them if not used properly.

It is difficult to genetically manipulate trees because with present techniques they cannot be replicated from single cell samples. The poplar is an exception, however, which is why the Rhinelander scientists chose to work with it.

Poplars that could be genetically altered to withstand herbicides would save growers the expense of mechanical weed control and reduce the cost of growing poplar as an alternative fuel source.

Genetic engineering research is also continuing on growing loblolly pines and sweetgums from single cell lab cultures, a prerequisite for attempting genetic engineering so that the resulting product is uniform.

For additional information

CONTACT: DON RIEMENSCHNEIDER (WI)

(715) 362-7474



HEMLOCK WOOLLY ADELGID

Hemlock woolly adelgid (Adelges tsugae Annand), continues to spread in the northeastern United States at an alarming rate. White cottony material along young hemlock branches indicates an infestation of hemlock woolly adelgid. The pest can be controlled using any one of several registered chemical pesticides, as long as all parts of the infested tree are covered.

Research has shown that horticultural oil applied at the dormant rate (2%), once during March/April or October/November, killed 95-100% of adelgids. Horticultural oil applied at the summer rate (1%), once during May through September, killed all adelgids. The same was true for insecticidal soap applied any time from May through November.

Oil and soap are among the safest pesticides available because they kill only soft-bodied arthropods such as adelgids, aphids, and scales. They do this by "suffocation" rather than poisoning.

Several contact poisons including diazinon, fluvalinate, and malathion are also registered and can be effective when applied any time from May through November. For all these pesticides, thorough coverage of the infestation is essential for one-year control.

For additional information

CONTACT: DR. M. S. MCCLURE  
Director of the Valley Laboratory  
Connecticut Agricultural  
Experiment Station  
Windsor, CT

WASP BEING STUDIED AS POSSIBLE FIRE ANT BIO-CONTROL AGENT

According to researchers at USDA's Agricultural Research Service (ARS), Orasema sp. wasps from Brazil are being studied as potential biological control agents for the imported fire ant (Solenopsis sp.), according to ARS researchers. The wasp, which feeds on the ants according to ARS, "has developed a system for sneaking into fire ant colonies and acquiring the nest odor." Fire ants use their sense of smell to identify intruders and every ant smells the same; so if an organism doesn't "smell right," it gets "viciously attacked and killed." ARS researchers also stated that "....To be able to hang around colonies and eat the ants, Orasema sp. wasps...masquerade as fellow ants by somehow acquiring the colony odor." ARS personeel explain that wasp larvae hitch a ride on foraging ants and are so tiny the ants don't realize they are present inside a colony. By the time they are big enough for the ants to detect them, they have passively acquired the nest odor, that's the only way the larvae are able to survive in the colony (eventually feeding on the ant pupae).

Although the wasp won't eat enough ants to be a control by themselves, they could put stress on a fire ant colony. The stress would make the ants more susceptible to other bio-controls or pesticides in future integrated pest management strategies.

For followup

CONTACT: DR. R. VANDER MEER (FL)

(904) 374-5918





# EPA GRANTS SECTION 5 PERMIT FOR BIO-INSECTICIDE

A Section 5 experimental-use permit was granted by EPA recently to Mycogen Corporation for a new bio-insecticide intended for control of certain crop pests. The speedy agency action on the permit application came in response to a letter to Linda Fisher (Assistant Administrator for Pesticides and Toxic Substances) from Rep. Brown (D-Ca). In a restatement of EPA policy, "to expedite the processing of "safer" pesticides, such as many of the bio-pesticides and pheromones (sic), to replace or help reduce the dependence upon higher risk pesticides."

The new bio-insecticide consists of dead cells which cannot multiply or spread, according to Mycogen. The company noted, "The active ingredient is a protein produced by a naturally-occurring bacterium, Bacillus thuringiensis (Bt). Mycogen researchers use recombinant DNA techniques to insert the gene that produces the Bt toxin into another naturally-occurring bacterium, Pseudomonas fluorescens."

Rep. Brown's letter to Fisher said, "I realize EPA currently has policies to waive data requirements on low-risk pesticides, but I am hearing increasing complaints from applicants, such as Dr. Caulder (Mycogen), that there are still long delays in the registration process. I am especially concerned about expediting pheromone (sic) registrations and am hearing from IPM practitioners in my State about this." [Editors Note: The USDA Forest Service has similar concerns].

The Congressman's letter continued:

"It would seem to be sound policy to expedite those applications for uses which are in highest need. By this I mean that if cancellation, resistance, or other factors have limited pest control options for a specific pest on a specific crop to a very small set, EPA should 'flag' this pest/crop need in the registration process. This need becomes especially critical as reregistration starts to cause registrations to be dropped especially for minor uses....[Editor's Note: Another concern of the USDA Forest Service]."

"I am well aware of the potential legal difficulties in making comparative risk and essentiality decisions within the current regulatory and statutory situation. Accordingly, I would like you to examine options for a priority-setting system for regulatory decisions along the lines I have discussed and, if you agree that such a system would be beneficial, would appreciate your analysis of what legal impediments exist to establishing a need-driven registration priority system."

For updates on the EPA registration/reregistration process

CONTACT: DENNIS R. HAMEL

(202) 453-9600



### APPLES AND ALAR

It was exactly one year ago this month that a new word entered the vocabularies of health-conscious consumers across the country. No longer concerned only with cholesterol counts or fat contents, consumers from California to Maine began worrying about "Alar" (daminozide). News reports last March emphatically warned the public about the potentially harmful effects of the chemical pesticide. Alar is an agricultural agent used to enhance ripening and coloring in apples. Though fruits and vegetables are considered some of the healthiest edibles available, Alar changed consumer perception of fresh produce and threw an aura of distrust over the entire food and pesticide industries.

Alar took the country by storm. Apple sales dropped dramatically, and apple-juice and apple-sauce manufacturers suffered serious sales declines. Not only did parents restrict apple intake in their children, but public-school districts throughout the country eliminated all apple products from lunch menus. The apple industry estimates that \$100 million was lost because of the Alar scare. But while losses can be attributed to this specific incident, there is no way to estimate ongoing industry losses. As consumers became aware of the chemicals used in agriculture--and the possibility of ingesting residues of these chemicals--a panic for organic produce set in.

During the height of the Alar scare, demand for organic produce reached record levels. As consumers weighed the suspected dangers of commercially-grown produce against the higher costs of organic fruits and vegetables, organic became a popular alternative.

But according to food-industry executives, consumer demand for organic produce has slipped dramatically in the last year. Organic has been a "a little bit of a flash in the pan. Real growth of organic fruits and vegetables has been stymied by high prices, an absence of Federal standards, a lack of consistent supply and quality, and unsubstantiated claims of nutritional superiority.

Surveys and polls conducted by an assortment of public and private groups continually indicate that consumer demand for organic produce is extremely high. But, according to mainstream retailers, when push comes to shove, consumers simply don't purchase organic food. And unless another Alar incident hits the country, retailers say demand for organic isn't likely to increase substantially in the years ahead.

END





SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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FACT SHEET ON BACILLUS THURINGIENSIS IN ERROR

It was recently brought to the attention of the USDA Forest Service that the U.S. Environmental Protection Agency (EPA) omitted pertinent information in their Fact Sheet #93, December, 1988 for Bacillus thuringiensis (Bt). The error occurs on page 6 where it is stated that non-target effects include "acute toxicity in birds ( 178 ppm LD<sub>50</sub> and 1 ppm NOEL)." The data to support this assertion was improperly collected using an unregistered, oil-based formulation.

EPA has agreed to file an updated Fact Sheet to provide correct data in the near future. In the meantime it should be noted that Bt does not, to our knowledge, have direct adverse impacts on birds .

For further information

CONTACT: MIKE MENDELSSHON (EPA) (703) 557-2690

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090 (204 RPD), Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.



## SECOND FSCBG II WORKSHOP COMPLETED AT CLEMSON UNIVERSITY

The second Forest Service Cramer-Barry-Grim (FSCBG) aerial spray model workshop using the Data General was held at the Data General Training Center, Clemson University, February 5-9. This was the final of the series of four scheduled workshops (two using personal computers and two using the Data General). Through the cooperative efforts of Continuum Dynamics, Inc., Princeton, NJ; Oregon State University; and WO/FPM over fifty students have received training on use of the model. Participants at the February 5-9 workshop included:

Andy Knapp	Forest Service, FPM, Boise Field Office
Julie Weatherby	Forest Service, FPM, Boise Field Office
John Ghent	Forest Service, FPM, Asheville, NC
Donna Leonard	Forest Service, FPM, Asheville, NC
Larry Barber	Forest Service, FPM, Asheville, NC
Dee Dee Sellers	Forest Service, FPM, Harrisonburg, VA
Jeffrey Witcosky	Forest Service, FPM, Harrisonburg, VA
William Buzzard	Forest Service, FPM, Middletown, PA
Marc Roberts	Forest Service, FPM, St. Paul, MN
Michael Connor	Forest Service, FPM, St. Paul, MN
Dan Twardus	Forest Service, FPM, Morgantown, WV
Chuck Coole	Forest Service, FPM, Morgantown, WV
Jesus Cota	Forest Service, FPM, Washington, DC
Terry Biery	USAF, Rickenbacker ANGB, Ohio
Richard Cromwell	University of Florida, Gainesville, FL
Parshall Bush	University of Georgia, Athens, GA

For additional information

CONTACT: PAT SKYLER (CA) (916) 758-4600

## C-130 SPRAY CHARACTERIZATION TRIALS SCHEDULED

The Morgantown Field Office reports that on February 20-28, they conducted spray characterization trials with an Air Force C-130. The purpose was to evaluate its ability to apply Bacillus thuringiensis for controlling gypsy moth infestations on two large military installations in Maryland this spring. The evaluation was conducted in Las Cruces, New Mexico in cooperation with Drs. Ellis Huddleston and Robert Sanderson of New Mexico State University. The Bt was provided by Novo Laboratories, Inc., Abbott Laboratories, and Sandoz Crop Protection, Inc.

Jack Barry participated in the evaluations and collected the necessary meteorology data for input to the FSCBG model. In addition, Bob Ekblad arranged for the Atmospheric Sciences Laboratory at White Sands Missile Range to provide two 100-foot towers complete with instrumentation for gathering weather data at various heights.

If you would like more information about these trials

CONTACT: NOEL SCHNEEBERGER (WV) (304) 291-4133





### ATRAZINE USE RESTRICTED

The U.S. Environmental Protection Agency (EPA) recently announced that it has reclassified atrazine as a restricted-use pesticide. The reclassification is based on the potential for groundwater contamination. Other atrazine label changes agreed to by EPA and the manufacturers/distributors include: label amendments designed to reduce worker exposure and point-source groundwater contamination. Without the new labels, atrazine products cannot be released for shipment or use after September 1.

The revised end-use product labels for atrazine must carry the following statements: "Restricted-Use Pesticide (groundwater concerns). For retail sale to and use only by certified applicators or persons under their direct supervision, and only for those uses covered by the certified applicator's certification. This product is a restricted-use herbicide due to groundwater contamination concerns. Users must read and follow all precautionary statements and instructions for use in order to minimize potential for atrazine to reach groundwater."

The revised precautionary statements and instructions for use include: "Users are required to wear long-sleeve shirts and long pants or equivalent, chemical resistant gloves, and boots (waterproofed). In addition, persons involved in mixing/loading operations are required to use chemical resistant rubber or neoprene gloves and a face shield or goggles. . . Groundwater contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material. . . This product may not be mixed/loaded, or used within 50 feet of any well, including abandoned wells, drainage wells, or sink holes. . . Do not apply this product through any type of irrigation system."

For additional information

CONTACT: LARRY GROSS (WO)

(703) 235-8209

### HAZARDOUS MATERIALS STORAGE

In addition to the hazardous storage buildings discussed by Garth Baxter, R-4 pesticide coordinator, at the San Antonio workshop, a new EPA-approved shed is now available. Called HAZ-STOR, the liquid storage buildings comply with EPA regulations and model building codes. A brochure is available that illustrates explosion relief panels, fire protection systems, explosion-proof wiring/lighting, secondary containment sump, and other protective features.

The manufacturer says the HAZ-STOR buildings are rugged and designed to provide effective and approved storage.

For additional information and/or a copy of HAZ-STOR's latest brochure

CONTACT: DENNIS F. SERIO (IL)

(708) 298-9250



### PROTOZOAN PRODUCTION ABANDONED

Despite the early-heralded potential for success of the protozoan Nosema locustae against rangeland grasshoppers, the USDA Forest Service has learned that the primary producer, Evans Biocontrol, Inc. has gone into receivership. The Forest Service understands that the Evans Biocontrol product (NoLo Bait) is in the process of being transferred to Technology Funding, Inc. of San Mateo, California.

For additional information

CONTACT: PETER BERNARDONE (CA)

(415) 345-2200

### LIST OF RESTRICTED-USE PESTICIDES AVAILABLE

Larry D. Schulze, extension pesticide coordinator for the Nebraska Extension Service, recently compiled an 8-page summary of all Federally registered, restricted-use pesticides. For a copy of the list, which contains common name, trade name, type, formulations restricted, and use patterns of the active ingredients

CONTACT: LARRY SCHULZE (NE)

(402) 472-1446

### PESTICIDE CANCELLATIONS CAUSE CONCERNS

According to the publication Landscape Management, almost one-half of all current pesticide registrations for use by horticulturists are being cancelled by EPA because the registrants did not pay the required \$425 reregistration fee for 1989, or do not intend to pay the \$650 for each product in 1990. This information was made available at a recent symposium on minor-use pesticide registrations.

Out of about 45,000 pesticide registrations for all uses, almost 20,000 are being lost, EPA spokespersons said at the symposium. It is agreed, however, that most of the products had been out of commercial production for some time.

The government and pesticide industry speakers at the symposium, co-sponsored by the American Association of Nurserymen (AAN), observed that this loss was just the beginning. Pesticide registrants are most likely to drop even more registrations, especially those with limited commercial use, as testing costs and administrative burdens increase.

The AAN has testified before Congress urging a modification of pesticide re-registration requirements to take into account low-volume users such as the horticultural, ornamental, and forestry industries. AAN has also met with USDA officials to stress the importance of the "minor-use issue."





## ENDANGERED SPECIES PROTECTION PROGRAM BIOLOGICAL OPINION ISSUED

The U.S. Environmental Protection Agency (EPA) announced in the January 11 issue of the **Federal Register** the availability of the final U.S. Fish and Wildlife Service (FWS) Biological Opinion on selected pesticides.

The document responds to EPA's September 30, 1988, request to the FWS for reinitiation of formal consultation on a portion of the existing Biological Opinions that were generated from the 1982 to 1984 cluster consultations. It was intended to clarify the status of certain pesticides and/or species, allow EPA to refine its "may affect" determinations, and allow FWS to review its approach to evaluating data for Biological Opinions. The current Biological Opinion evaluates pesticides intended for use on certain crops, in forests, as mosquito larvicides, and on range- and pasturelands.

The Biological Opinion is organized as follows:

Section 1. Assumptions

Section 2. Determinations of the effects of 112 pesticides on one or more of 165 listed species.

Section 3. Profiles of potentially affected species.

Section 4. Maps and location descriptions.

Section 5. Chemical data with hazard and exposure determinations.

The Biological Opinion is available for inspection at all EPA and FWS Regional offices or you may

CONTACT: SHELLY WITT (WO/FS) (703) 235-8017  
LARRY TURNER (WO/EPA) (703) 557-1007

## VACANCY ANNOUNCEMENT

The St. Paul, Minnesota Field Office recently announced the opening of an entomologist (GS 11/12) position. The announcement closes March 2. The incumbent to the position will coordinate all aspects of a complex major insect detection, evaluation, prevention, and suppression program. The incumbent will also be responsible for exercising good scientific judgment, collaborating with Research, and using new techniques in the field of integrated pest management in forestry.

For a copy of the announcement or other information

CONTACT: MS. JOANNE MEYER (MN) (612) 649-5020



## PESTICIDE RESEARCH NEEDS

At the recent San Antonio pesticide workshop, it was noted that the U.S. Environmental Protection Agency (EPA) periodically identifies data gaps that may need to be filled if certain active ingredients are to stay on the market. In the case of forest-use pesticides, we have summarized EPA's data needs below. In most cases the manufacturer will provide data to fill the gaps, but in some cases use of NAPIAP funds may be appropriate, especially when fate in the forest environment is involved. Before proceeding to conduct the research or to develop a complete proposal, always check with the appropriate manufacturer, EPA, or WO-FPM to determine if data gaps are already being filled.

The following active ingredients are subject to EPA data call-in soon and should be given high priority consideration for data gap filling in 1990-91:

<u>ACTIVE INGREDIENT</u>	<u>SUMMARY OF MAJOR DATA GAPS AS IDENTIFIED IN EPA FACT SHEETS OR REREISTRATION STANDARDS</u>
<b>Amitrole</b>	See Fact Sheet and Registration Standard for amitrol dated May, 1984. Note special need for studies on inert ingredients, bird and fish toxicity tests, photodegradation studies, worker exposure studies, and forestry field dissipation studies.
<b>Atrazine</b>	See Fact Sheet for atrazine. Note special need for environmental fate studies, reentry guidelines, and dislodgeable residue studies.
<b><u>Bacillus thuringiensis</u></b>	All data requirements (40 CFR 158) for all Bt strains except HD-1. See Fact Sheet #93, December, 1988.
<b>Carbofuran (Furadan)</b>	See Fact Sheet No. 189, January, 1989. Note special need for data on fate of granulars used in forestry (e.g., seed orchards), T&E species protection, and benefits of use information as well as the existence of any efficacious alternatives.
<b>2,4-D</b>	See Fact Sheet for September, 1989. Note special need for research on ecological effects and environmental fate when used in forestry. Separate data needed for ester and amine formulations. T&E species effects and reentry guidelines also need studies to support continued use in forestry.
<b>Diazinon</b>	See Reregistration Standard of November, 1989. Note special need for soil dissipation, environmental fate in the forest environment, and aquatic sediment analyses.





<b>DDVP (Dichlorvos)</b>	Needed are additional ecological effects and environmental fate data on DDVP; however, since DDVP is closely related to trichlorfon, the data gaps identified by EPA for the latter are applicable. For example, data is needed on reentry guidelines, aquatic impacts (e.g., fish), environmental fate, ecological effects, and forestry field dissipation studies.
<b>Diflubenzuron (Dimilin)</b>	See Fact Sheet No. 68, September, 1985. Note special need for environmental fate studies on birds, and freshwater invertebrates. Also note need for metabolism studies, especially in mushrooms and other forest "foods."
<b>Oxydemeton-methyl (Metasystox-R)</b>	See Fact Sheet No. 144, October, 1987. Note need for environmental fate studies, reentry data, data on dislodgeable residues, and ecological effects.
<b>Permethrin (Ambush)</b>	Need information on permethrin and other synthetic pyrethroids (e.g., <b>esfenvalerate</b> (Asana), <b>cyfluthrin</b> (Baythroid), and <b>pydrin</b> (Pydrin)). Data needed includes information on environmental fate and ecological effects of these materials used in forestry situations. Also needed is data on effects on non-target plants and animals. An EPA decision to issue a PD-1 (See " <b>Short Subjects...</b> " Issue No. 90-2) has been pending for months with Victor Kimm, Deputy Assistant Administrator for Pesticides and Toxic Substances, however, he indicates a tough decision since permethrin has "lots of uses with high benefits."

Although EPA has not indicated Special Review action in 1990 on the following forest-use pesticides, there are researchable data gaps identified in EPA Pesticide Fact Sheets, Reregistration Standards, and FS NEPA documents. For example, data may need to be collected on:

<b>Acephate (Orthene)</b>	See Fact Sheet #140, October, 1987. Note special need for data on: environmental safety to birds, photodegradation, soil metabolism, field dissipation, spray drift, applicator exposure, and benefits and use data.
<b>Azinphos-methyl (Guthion)</b>	See Fact Sheet #100, September, 1986. Note special need for data on: reentry data, exposure potential, foliar and soil dissipation, dermal and inhalation exposure, forestry field dissipation, non-target accumulation, and impacts on non-target wildlife.
<b>Benomyl (Benlate)</b>	See Registration Standard and special need for research on worker exposure and economic benefits of use.
<b>Cacodylic Acid</b>	See EPA Decision Document (1981). Note special need for data on wildlife toxicity, reentry, and user exposure.



<b>Chlorothalonil (Bravo)</b>	See Fact Sheet issued in 1984. Note special need for environmental fate data including hydrolysis, photodegradation, anaerobic and aerobic soil metabolism, leaching, and soil dissipation. In addition, EPA needs data on the following ecological effects: fish residues and bird reproductive effects.
<b>Chlorpyrifos (Dursban)</b>	See appropriate EPA Fact Sheet. Note special need for data on: plant and animal exposure, photodegradation, soil metabolism, field dissipation, phytotoxicity, and indoor use patterns (exposure).
<b>Dalapon (Basfapon)</b>	See Fact Sheet #141, July, 1987. Note special need for data on environmental fate and ecological effects.
<b>Dicamba (Banvel)</b>	See Fact Sheet of October, 1983. Note special need for data on hydrolysis, photodegradation, and field dissipation.
<b>Dichloran (DCNA)</b>	See Fact Sheet #13 issued in 1984. Note special need for data on wildlife and aquatic organisms, hydrolysis, photodegradation, soil metabolism, leaching, field dissipation, and impacts on fish. Reentry data is also needed.
<b>Dichloropropene (Telone)</b>	See Fact Sheet #95, September, 1986. Note special need for research on photodegradation, soil metabolism, soil dissipation, and groundwater. Also needed is reentry data and dermal exposure potential.
<b>DCPA</b>	See EPA Science Chapters, July, 1988. Note special need for data on: fish and bird toxicity, hydrolysis, soil metabolism, leaching, field dissipation, and bio-accumulation.
<b>2,4-DP</b>	See Pesticide Fact Sheet of September, 1989. Note special need for studies on: groundwater contamination potential, ecological effects data, environmental fate of use in forestry, non-target plant and animal data, endangered species protection. Data will be needed for acid, ester, and amine formulations.
<b>Dimethoate</b>	See Registration Standard of March 1983. Note special need for data on certain ecological effects and environmental fate topics.





<b>Glyphosate (Roundup)</b>	See Reregistration Standard of June 30, 1986. Note special need for studies on: exposure of forestry workers, phytotoxicity to non-target plants, endangered species protection, and other ecological effects and environmental fate studies.
<b>Hexazinone (Velpar)</b>	See Fact Sheet No. 183, September, 1988. Note special need for studies on: soil mobility, groundwater contamination potential, non-target plant and animal effects, human exposure, reentry guidelines, T&E species protection, soil dissipation, and spray drift.
<b>Imazapyr (Arsenal)</b>	Needed is research on ecological effects, e.g., avian studies, freshwater fish impacts and freshwater aquatic invertebrate effects. Also needed is research on environmental fate effects on plants and fish.
<b>Methyl bromide</b>	See Fact Sheet #98, August, 1986. Note special need for research on plant residue chemistry, storage stability, photodegradation in water, soil metabolism, leaching and soil dissipation.
<b>Tebuthiuron (Spike)</b>	See Fact Sheet #137, July, 1987. Note special need for data on soil and water photodegradation, soil metabolism, leaching, bioaccumulation (fish), and non-target insect and/or plant impacts.

We do not have Fact Sheets or Registration Standards for the following active ingredients, but it is likely that environmental fate and ecological effects data is missing and is researchable under NAPIAP:

Bifenox (Modown)	Bromacil
Captan	Diphenamid
Fosamine ammonium (Krenite)	MSMA
Napropamide (Devrinol)	Oxyfluorfen (Goal)
Sethoxydim (Poast)	Strychnine
Sulfometuron methyl	Triadimefon (Bayleton)

Finally, in addition to the data gaps identified above, Regions, Stations, and the Area pesticide coordinators need to examine local NEPA documents to determine site specific data gaps in their geographic area.

Pesticide coordinators need to work with potential NAPIAP investigators to:

- develop good research contacts/networks for NAPIAP research;
- describe NAPIAP and serve as the primary contact for the Program;
- assure that the NAPIAP call letter gets to all potential NAPIAP researchers;



- help focus NAPIAP proposals to answer the data gaps for local areas of concern and include discussion on how gaps identified in the local NEPA documents are to be filled and what relationship might exist between local data gap filling and National needs;
- ensure that project proposals speak to compliance with Good Laboratory Practices (GLPs).
- assure that a FS unit is associated with each study (have universities submit their proposals through the appropriate Station).

Pesticide coordinators also need to:

- review proposals submitted to their units to determine if indeed they meet the criteria for NAPIAP proposals.
- forward qualifying NAPIAP proposals through your R/S/A to the Chief (FPM/WO, file 2150).
- take the lead in setting up appropriate documents to assist in the transfer of NAPIAP funds to the principal investigators.

Pesticide coordinators need to work with principal investigators of funded projects to:

- serve as the primary contact for the Program;
- ensure that NAPIAP funded research complies with GLPs;
- encourage timely submission of progress and final reports;
- ensure that equipment purchased with NAPIAP funds by universities reverts to the Forest Service upon completion of the project.

For additional information on researchable data gaps, NAPIAP proposals, or submission time schedules

CONTACT: ZDENKA HORAKOVA (WO)

(703) 235-8209

END





SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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MCH EUP RENEWED

The U.S. Environmental Protection Agency (EPA) recently notified the USDA Forest Service (FS) that the experimental-use permit (EUP-23) for methylcyclohexenone (MCH) had been extended for three years. The current date of expiration is May 23, 1993.

Under the EUP extension, as much as 80 pounds of MCH may be used as an antiaggregative to manage pest populations of Douglas-fir and/or spruce beetles. Either beads or bubble caps may be used.

The Washington Office of Forest Pest Management is continuing to negotiate with Burlington BioMedical and Scientific Corporation, partner in a Technology Transfer agreement with the agency, to determine product availability for 1990. In the meantime, product on hand may be used under the EUP extension and in compliance with the original conditions of EUP-23. For additional information on this EUP

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(703) 235-8209

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### NATIONAL POISON PREVENTION WEEK

On January 16, President Bush proclaimed the week beginning March 18, as National Poison Prevention Week and called upon all Americans to observe the week by participating in appropriate programs and activities.

Since its inception 29 years ago, "National Poison Prevention Week" has encouraged Americans to take measures to prevent childhood poisonings. Today we know that this important public awareness campaign has helped save lives. According to data gathered by the U.S. Consumer Product Safety Commission, approximately 450 children under 5 died in 1961 after ingesting medicines or household chemicals and/or pesticides. During 1987, the most recent year for which complete statistics are available, 31 deaths from accidental poisoning occurred among children--a 93 percent decrease.

Efforts to promote public awareness, coupled with educational programs for parents and the use of child-resistant packaging, have played a major role in the reduction of poisoning deaths. Offering lifesaving advice and information over the telephone, the Nation's Poison Control Centers (PCC) have also helped prevent many serious injuries and deaths among children.

While many tragic deaths have been prevented in recent years, we still have much work to do. Each year, more than half a million children are exposed to potentially poisonous chemicals, as documented through calls to PCCs.

More parents and grandparents must recognize their primary role in poison prevention. Accidental poisonings can be prevented if parents, grandparents, and other guardians keep medicines and household chemicals out of the reach of children. Adults should also be sure to store all potentially harmful substances in packages with child-resistant closures.

These important messages are carried across the country by the Poison Prevention Week Council, a coalition of 36 national health, safety, and governmental organizations and agencies concerned with preventing childhood poisonings. The annual observance of "National Poison Prevention Week" provides a special opportunity for Poison Control Center personnel, educators, pharmacists, pesticide coordinators, and other health professionals to remind every American adult of the need to protect children.

### JOB ANNOUNCEMENTS:

The Northern Region (R-1) recently issued a vacancy announcement for an interdisciplinary general engineer (GS 11/12). The position is that of a project leader in the FPM program at the Technical Development Center, Missoula Montana. The incumbent to the position will be responsible for conducting equipment development research, transferring technology, and designing forestry-related pesticide application equipment.

The Southwestern Region (R-3) recently issued an announcement for an interdisciplinary forest pest manager (GS-13). The position is that of pesticide coordinator and Cooperative Pest Action Program coordinator for Arizona and New Mexico. Headquarters for the position will be Albuquerque

CONTACT: R-1 PERSONNEL	(406) 329-3673
R-3 PERSONNEL	(505) 842-3292





### TOXICOLOGY VIDEOTAPE

The Oregon State University (OSU), Department of Forest Science recently completed part of a contract with the USDA Forest Service to produce a videotape on "Toxicology." The videotape is the third in a series of four on "Pesticides in Forestry." The final videotape in the series will be on "Risk Analysis."

The Washington Office, Forest Pest Management (FPM) staff received, reviewed, and approved the master videotape from OSU. WO-FPM will purchase duplicate videotapes and instructional materials (two (2) 1/2" tapes per Region, Station, and the Area; two (2) Instructor's Guides for each unit, and one hundred (100) Viewer Summaries for each unit.

Additional instructional materials and videotapes will be available (on a one-time basis) from the OSU Media Center at the following rates:

3/4" U-Matic Videotape	\$35.00 per copy
1/2" VHS Videotape	\$26.50 per copy
Instructor's Guide	\$ 1.00 per copy
Viewer's Summary	\$ 0.20 per copy

For later purchases, the cost of the program will be \$130.00 and will include a 3/4" or 1/2" videotape, one copy of the Instructor's Guide and 10 copies of the Viewer's Summary. In addition, the OSU Media Center can provide orders of the Viewer's Summary in quantity as follows:

Viewer's Summary	\$ 25.00 per 100 copies
Viewer's Summary	\$215.00 per 1000 copies

For additional information

CONTACT: ZDENKA HORAKOVA (WO) (703) 235-8209

### HERBICIDES AND WILDLIFE HABITAT

A newly published "Annotated Bibliography on the Effects of Herbicides on Wildlife Habitat and Their Uses in Habitat Management" is now available from Region 8 (Atlanta, Georgia). The bibliography (Technical Publication R8-TP 13, January, 1990) is a compilation of 293 published reports on the effects of herbicides on wildlife habitat. It is expected that the bibliography will aid forest managers in determining the implications of vegetation management activities on wildlife species and their habitats. Geographically, the bibliography covers the continental United States.

Annotations in the bibliography consist of abstracts, conclusions, and/or summaries taken from the original references. In addition to the printed version of the bibliography, it is also available as an ASCII text file on either 5.25" or 3.5" disks.

Requests for copies should be directed to R-8

CONTACT: JOHN TAYLOR (GA) (404) 347-2718



## ROTENONE SCIENCE CHAPTERS

4

The U.S. Environmental Protection Agency (EPA) recently published the "Science Chapters" associated with the "Guidance for the Reregistration of Pesticide Products Containing Rotenone as the Active Ingredient." The 433-page document provides background information on rotenone--a botanical insecticide/acaricide/piscicide. Rotenone is derived from the roots of cube', especially plants in the South American genera Barbasco and Derris. Of the total domestic usage of rotenone, 54 percent is applied to "general" sites (livestock, pets, and households), 32 percent is applied to aquatic non-food sites (piscicides to control trash fish), and 14 percent is applied to terrestrial food crops (primarily potatoes, tomatoes, pears, and apples).

Rotenone is registered for terrestrial food crop, terrestrial non-food (ornamentals, tobacco, lawn, and turf), greenhouse food crop (vegetables), greenhouse non-food (ornamentals and forest trees), domestic outdoor, aquatic non-food, and indoor (livestock and pets with their premises; ornamental plants; household and human uses; commercial and industrial uses) use sites.

Rotenone was put into Special Review in 1981. The human toxicological trigger was oncogenicity. It was subsequently taken out of Special Review due to lack of conclusive evidence. Subsequently, additional oncogenicity studies have been received by EPA. Recently, rotenone was peer-reviewed by the EPA Toxicology Branch Peer Review Committee; however, the oncogenicity issue was resolved.

Rotenone's use as a piscicide was evaluated in the Special Review process. Since the piscicide can kill target as well as non-target fish this has been an issue. This concern seems to have been alleviated, however, since data shows that repopulation of non-target organisms usually returns to normal levels after treatment.

A concern about rotenone is its potential to affect threatened and endangered species. This concern seems to be addressed by a new labelling requirement that requires consultation with wildlife authorities before rotenone products are used. The Special Review also recommended that label modifications be made for all aquatic-use rotenone products by requiring written approval by a State or Federal fish and wildlife biologist before each use, with the wildlife authorities verifying that the application will not adversely affect endangered species.

For additional information

CONTACT: JOSEPH M. TAVANO (EPA)

(703) 557-2690

## CANADIAN PEST MANAGEMENT SEMINAR SCHEDULED

A seminar entitled "Recent Advances in Pest Management" is scheduled to be held at the Water Tower Inn, Sault Ste. Marie, Ontario, October 22-24, 1990. The seminar will be the second in a series on "Advances in Canadian Forest Research." It will be held under the auspices of the Canadian Institute of Forestry. For more information

CONTACT: PETER DE GROOT

(705) 949-9461





## INSECT GROWTH REGULATOR MAY BE SOLUTION TO WHITE PINE WEEVIL PROBLEM

5

According to the Fall 1989 issue of the "Newsletter of the Forest Pest Management Institute (FPMI), Sault Ste. Marie, Ontario, Canada, the white pine weevil, Pissodes strobi (Peck), is a persistent pest on several pines and spruces, severely deforming growing tips. Silviculturists have determined that weevil damage drastically reduces the quality of the first log. The persistence of weevil attack and the lack of effective control measures have seriously jeopardized the future of certain white pine plantations.

When one examines the life history of this insect (See Forest Insect and Disease Leaflet No. 21), it becomes readily apparent why it is difficult to control. The damaging larval stage is totally protected by the bark. The adults emerge over a long period lasting nearly a month. To control them, they should be repeatedly treated with insecticide, which may be neither cost effective or environmentally acceptable. The same is true during the fall, when the weevils are preparing to overwinter. They emerge from their pupal chambers over a prolonged period. Systemic insecticides that may be able to reach the larvae are generally ineffective on conifers. Various methods of control have been attempted with varying degrees of success. Some potentially promising methods are still in the experimental stages.

The eight methods listed in the Table on the next page fall into two categories--Prevention and Treatment. The two most widely used systems, although they have met with only limited success, are the sanitation method and use of broad-spectrum pesticides.

The sanitation procedure merely removes the source of the subsequent year's infestation. For this scheme to be successful, the entire area, including surrounding plantations, have to be examined for weevil-damaged leaders, which should be removed. This is not always possible. The two broad spectrum insecticides that have been used for white pine weevil control are methoxychlor in Canada and lindane in the U.S.

Diflubenzuron, or Dimilin, is an insect growth regulator (IGR) that inhibits chitin synthesis when it is ingested by insect larvae. In weevils, the material ingested by the adult is transferred to the egg, where it inhibits chitin formation in the embryo. The egg develops fully but the larva fails to emerge because of a poorly developed integument that lacks chitin.

Diflubenzuron has some interesting properties that make it an attractive control agent. It is adsorbed to the cuticular waxes of the shoots of conifers and remains active for several weeks, whereas the material that reaches the forest floor is rapidly degraded by microorganisms within a week.

Based on several years of study, it has been determined that spraying very early in the spring, making sure that the terminal leader is completely covered by the spray provides near total control of the weevil with complete protection of the terminal leader. Since diflubenzuron has little effect on adult parasites, predators, or pollinators, it is environmentally attractive.

For additional information

CONTACT: FPMI (CANADA)

(705) 949-9461



TABLE 1. OVERVIEW OF THE VARIOUS CONTROL METHODS FOR WHITE PINE WEEVIL

Strategy/Method	Description	Current Status
<u>Prevention:</u>		
1. Genetic	Selection of weevil-resistant trees.	Resistant trees are available, but it is a long-term proposition.
2. Ecological	Growing trees under shade and close together to create a moist overwintering site for the weevil.	Trees under shade have less weeviling, but also grow poorly. When trees are grown close together, blister rust is favored.
3. Sanitation	Clipping and burning infested terminal leaders.	Labor intensive and works only when all adjacent areas are clipped.
4. Biochemical	Trapping out or confusion technique with aggregation pheromones and host volatiles.	Pheromones and host volatiles and their interaction with the weevil are not fully understood.
5. Physical	Stickers on terminal leaders as barriers--tanglefoot.	Works to a certain extent but is weather dependent.
<u>Treatment</u>		
6. Biological	Parasites, predators, nematodes, and fungi.	Very little success.
7. Conventional Chemical	Methoxychlor, lindane, and permethrin.	Does not persist long. Multiple spraying is often necessary.
8. Biorational	Use of insect growth regulators such as diflubenzuron (Dimilin).	Treatment with diflubenzuron in spring before weevil emergence with complete coverage of terminal leader can provide total control with no damage.





### NATIONAL PESTICIDE WORKSHOP DEEMED A SUCCESS

The National Pesticide-Use Management and Coordination Workshop was held during the week of January 29, 1990, at the Holiday Inn-Riverwalk, in San Antonio, Texas. Forty plus pesticide coordinators, researchers and others from the Forest Service, APHIS, ARS, BLM, and Forestry Canada interested in pesticide use management attended the 3 1/2 day session. Forest Service pesticide coordinators represented the Chief's Office, Regions, Area, Stations, and Forests.

The agenda was consolidated from topics submitted by pesticide coordinators and included individual presentations, panels, and workshops. The program was full and covered WO Highlights, endangered species protection, coordination with BLM, forestry worker exposure, selective vegetation management, strategies for noxious weed control, federal facilities compliance, pesticide labeling, NPV's, pesticide-use reporting, good laboratory practices and a number of other subjects. Panels and work groups dealt with pheromones, APHIS Coordination, steering committees for aerial application of pesticides, risk assessments, FSH 2109.11, NAPIAP, and international opportunities.

The Workshop allowed participants to get updated in most of the key pesticide-related issues and provided an opportunity for a full range of discussions. In addition, the workshops enabled progress on subjects such as updating the FSH 2109.11 and NAPIAP. John Taylor, R-8, did an excellent job on local arrangements and all comments were positive regarding San Antonio and the Holiday Inn-Riverwalk as a meeting site.

A listing of action items from the Workshop will be transmitted to the participants along with critique comments. For information about the workshop

CONTACT: MAX OLLIEU

(WO)(703) 235-1560

### NEW FACT SHEETS AVAILABLE

The U.S. Environmental Protection Agency (EPA) recently released new Pesticide Fact Sheets on the following active ingredients: 2,4-D, 2,4-DP, MCPA, ethion, and coumaphos. The updated Fact Sheets are primarily the result of EPA's reregistration reviews and issuance of new Registration Standards.

For copies of any of these new Fact Sheets

CONTACT: LUELLA PENDERGRAPH (WO)

(703) 235-8209



SPECIAL REVIEW AND CANCELLATION UPDATE ON PESTICIDES USED IN FORESTRY

8

Dr. Kent L. Smith, USDA-ARS, Pesticide Assessment Laboratory compiles a quarterly list of pesticides in the United States that are undergoing Special Review or cancellation proceedings by the U.S. Environmental Protection Agency (EPA). The following list modifies the original by concentrating on forest-use pesticides. To obtain a copy of the full summary

CONTACT: DENNIS R. HAMEL

(703) 235-8209

SPECIAL REVIEW AND CANCELLATION UPDATE FOR PESTICIDES USED IN FORESTRY

Common Name <sup>1</sup>	Use <sup>2</sup>	PD 1 <sup>3</sup>	PD 2/3	PD 4	Status <sup>4</sup>
Amitrole	H	5/15/84	(1990)	---	Triggered by oncogenic risk to mixers/loaders/applicators.
Ammonium sulfamate (Ammate)	H	N/A	N/A	N/A	Cancellation pending due to non-payment of required reregistration fees.
Atrazine (Aatrex)	H	(1990)	(1990)	---	Special Review expected in 1990.
Benomyl (Benlate)	F	12/6/77	8/30/79	10/82	Triggered by mutagenic, teratogenic, reproductive risks, and hazard to wildlife. Continued registration for all products with requirement of masks for mixers/loaders of aerial application products.
		(1990)	(1990)	---	Special Review for second time.

<sup>1</sup>Common name of active ingredient and representative trade name.

<sup>2</sup>Use symbols: A=Antifoulant, B=Bacteriacide, D=Defoliant, F=Fungicide, G=Plant Growth Regulator, H=Herbicide, I=Insecticide, M=Miticide, N=Nematicide, P=Repellent, R=Rodenticide, S=Synergist, U=Molluscicide, and X=inert ingredient.

<sup>3</sup>EPA publishes position documents (PD) in the **Federal Register** concerning its regulatory position relative to pesticides in the Special Review Program. A PD 1 constitutes the initial public notification that a pesticide appears to pose an unreasonable risk(s) and solicits comments. The PD 2 is EPA's decision of whether or not the unreasonable risk(s) mentioned in the PD 1 have been refuted. If the PD 1 is refuted the Special Review is terminated. If the unreasonable risk(s) in the PD 1 are not refuted a PD 2/3 is issued which outlines EPA's preliminary determination and gives the Agency's proposed resolution to the PD 1. A PD 4 gives EPA's final determination to cancel, reclassify, amend, or continue the registration of a pesticide. The final notice becomes effective by force of law unless the affected parties request a judicial hearing.

<sup>4</sup>The status indicates the original trigger for Special Review and summarizes where in the process the review is in EPA.





Cacodylic acid and salts	H D	N/A	N/A	N/A	Continued registration after pre-RPAR review with requirement of additional data and masks or respirators for certain users.
Captan (Orthocide)	F	8/18/80	6/21/85	2/24/89	Triggered by oncogenic and mutagenic risks and other chronic effects. Continued registration of products registered nonfood uses and seed treatments.
Carbaryl (Sevin)	I	N/A	N/A	N/A	Continued registration after pre-RPAR review with requirement of label changes to minimize exposure.
Carbofuran (Furadan)	I N	10/16/85	1/25/89	(1990)	Triggered by acute toxicity to birds. Preliminary determination proposes cancellation of all granular products.
Creosote including coal tar and coal tar neutral oil	F I	10/18/78	2/19/81 (wood uses)	07/13/84 (wood uses w/ amendments)	Triggered by oncogenic and mutagenic risks. Continued registration with certain label modifications including restricted-use classification for most products, protective clothing requirements for applicators, and in some cases respirators.
			8/22/84 (nonwood uses)	10/16/85 (nonwood uses)	Cancellation of all products except for those labeled solely to control gypsy moth egg masses.
2,4-D	H	(1990)	N/A	N/A	Special review possible in 1990.
Dalapon (Dowpon)	H G	N/A	N/A	N/A	Cancellation pending for all products due to nonpayment for reregistration fees.



Special Review Update (Cont.)

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Diazinon	I N M	1/15/86  (1990)	1/15/86  (1990)	10/1/86 (with amend- ments)	Triggered by avian hazards. Cancellation of products registered for use on golf courses and turf farms. Special review (PD 1/2/3) expected for other registrations.
Dichlorvos (DDVP, Vapona)	I	2/24/88	(1990)		Triggered by oncogenic, adverse liver, and cholinesterase inhibition effects.
Disulfoton (Dimilin)	I	N/A	N/A	N/A	Continued conditional registration given in April, 1979 as restricted-use pesticide.
Dimethoate (Cygon)	I M	9/12/77	11/19/79	1/19/81	Triggered by oncogenic, mutagenic, and fetotoxic risks and reproductive effects. Cancellation of all dust formulations; label cautions, protective clothing, and further testing required for remaining products.
Endrin	I R	7/27/76	11/2/78	7/25/79	Triggered by oncogenic and teratogenic risks, and reduction in endangered and nontarget species. Cancellation of all products as of 8/1/85.
Ethylene dibromide or EDB	I N F H	12/14/77	12/10/81	10/11/83 (with amend- ments)	Triggered by oncogenic and mutagenic risks, and reproductive effects. Cancellation and emergency suspension of soil fumigation, and felled log fumigation. Continued registration with label changes for termite control, etc.





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Inorganic arsenicals	I	10/18/78	2/13/81	7/13/84	Triggered by oncogenic, mutagenic, and teratogenic risks. Continued registration with certain label modifications, including: restricted-use classification for most products, protective clothing requirement for applicators including in some cases respirators, and the implementation of permissible exposure limit (PEL) monitoring programs in pressure treatment plants.
ammonium arsenite	H		(wood uses)	(wood uses with amend-ments)	
arsenic acid	F				
arsenic trioxide	D				
arsenic pentoxide	D				
calcium arsenite					
copper arsenite					
lead arsenate					
sodium arsenate					
Lindane	I	2/17/77	7/3/80	10/19/83 (with amend-ments)	Triggered by acute toxicity, oncogenic and teratogenic risks and reproductive and other chronic effects. Continued registration with restricted-use classification for commercial use in forestry. Special Review relative to forest workers expected.
		(1990)	(1990)		
Linuron (Lorox)	H	9/26/84	8/17/88	1/27/89	Triggered by oncogenic risk to consumers. Continued registration of all products with no limitations of requirements.
Maleic hydrazide	G	10/28/77	N/A	1/5/83	Triggered by oncogenic, mutagenic, and reproductive risks. Suspended registration for all diethanolamine maleic hydrazide (DEA-MH) products due to registrant's failure to conduct required studies.

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Methanearsonates including MSMA	H	N/A	N/A	N/A	Continued registration following pre-RPAR review on condition that exposure and oncogenicity data be submitted and that labeling be amended to require appropriate protective clothing.
Oxydemeton-methyl (Mestasystox-R)	I M	10/5/87	(1990)		Triggered by concern of reproductive effects on mixers/loader/applicators and field workers.
Oxyfluorfen (Goal)	H	4/27/81	4/27/81	6/23/81	Triggered by oncogenic risks. Continued registration of all uses with required use of respirators by mixer/loader/applicators.
Pentachlorophenol	I F	10/18/78	2/19/81 (wood uses)	7/13/84 (wood uses with amends.)	Triggered by oncogenic, teratogenic risks. Continued registration with concentration limits for contaminants (dioxins and hexachlorobenzene) and certain label modifications including: restricted-use classification for most products, protective clothing requirements for some applicators.
Permethrin (Ambush, Pounce)	I	(1990)			Special review expected.
Pronamide (Kerb)	H	5/20/77	1/15/79	10/26/79	Triggered by oncogenic risks. Continued registration with requirement of certain label amendments.
Rotenone	I M	N/A	N/A	N/A	Continued registration following pre-RPAR review.





• Special Review Update (Cont.)

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Sodium cyanide (Cymag)	R	N/A	N/A	N/A	Cancellation of all products except those in capsules for use in M-44 devices.
Sodium flouroacetate or 1080	R	12/1/76	11/4/83	7/31/85	Triggered by reduction in nontarget and endangered species plus lack of antidote. Continued registration provided use directions are changed.
Strychnine and strychnine sulfate	R	12/1/76	11/5/83	10/19/83 (with amend- ments)	Triggered by reduction in nontarget and endangered species. Cancellation of all products with above-ground uses. Continued registration with label modifications of products for other than above-ground use on rangeland pastures, etc.
Trichlorfon (Dipterex, Dylox)	I	N/A	N/A	N/A	Remove from pre-RPAR because it is chemically-related to dichlorvos (See).

END



SHORT SUBJECTS  
AND TIMELY TIPS  
FOR PESTICIDE USERS

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NEW PHONE NUMBERS

Pesticide researchers at the Corvallis Lab, Pacific Northwest Forest and Range Experiment Station, report that they are no longer on the FTS phone system. Their commercial numbers is (503) 750-7365.

Region 5 pesticide coordinator, John Borrecco's telephone number has changed to: FTS 465-2873; commercial (415) 705-2873.

Curtis O'Neil, Pesticide Coordinator for R-2, had his FTS number changed to 776-9553.

Pen and ink changes should be made to Appendix A of "Short Subjects...", Issue No. 89-20, p. 12 to reflect these updates.

The Washington Office, Forest Pest Management, Pesticide-Use Management and Coordination Group writes and distributes this biweekly, informal newsletter as a means of providing current information to forestry pesticide users. Comments, questions, and items of input are welcome and may be sent to Dennis R. Hamel, Editor, USDA Forest Service, P.O. Box 96090 (204 RPD), Washington, D.C. 20090-6090. Reference to a commercial product or source in this newsletter does not constitute endorsement by the USDA Forest Service. Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or wildlife if they are not handled or applied properly. Use all pesticides in accordance with label precautions.





## EARTH DECADE '90

The first Earth Day was held April 22, 1970. Twenty years later plans are underway to launch Earth Decade 1990. The theme will be **"Make Earth Day, Every Day<sup>TM</sup>."**

The original Earth Day was considered by some to be a "hippie event;" however, today the environmental concerns of air pollution, ozone depletion, forest decline, global warming, groundwater contamination, endangered species, pesticide disposal etc. are reality and require the attention of an enlightened society. Not just attention by way of glossy public relations ads but real down to earth examples of environmental protection/enhancement. For example, you, your District, Forest, or Region can support Earth Decade 1990 by starting or stepping up any number of projects such as starting a recycling program, participating in Global Releaf (an American Forestry initiative), or following the leads set by these companies:

Weyerhaeuser started a recycling program for brown corrugated paper in 1974. Today, the company annually recycles about 1.5 million tons of paper, through 16 resource recovery locations across the country. It developed an office recycling program called WOW (Wecycle Office Waste), and offers it to business in several cities. An unusual aspect is that "We are one of a few major forest products companies to invest in resource recovery facilities across the United States, develop programs such as WOW, and actively pursue getting the paper out of the waste stream and put into use," says a company spokesperson.

At Dow Chemical; plans are underway for Earth Day activities, April 22. In 1986 Dow started its program, WRAP (Waste Reduction Always Pays), which involves a waste inventory database, waste reduction projects, and employee awards. The company estimates WRAP projects in 1988 and 1989 will reduce the waste stream by 88 million pounds per year. In the 1990's they hope to take even greater strides toward waste reduction.

CIBA-GEIGY placed 20-foot diameter environmental emblems depicting trees, water, and birds on buildings at its manufacturing plant in McIntosh, Alabama

But, it isn't just industry that's more involved in environmental matters. You too can be involved. For example the Forest Service is looking for volunteers to work on an Earth Decade 1990 student-faculty project at Howard University, Washington, DC. In addition, each and every unit can create its own project (e.g., "Clean a Stream," "Grow Greener," "Plan a Pesticide Pick-Up Day," etc.).

For additional information

**CONTACT: ANNE FEGE (WO)**

**(202) 447-2422**

### NEW VIDEOTAPE AVAILABLE

The Chesapeake Chapter of the American Registry of Professional Entomologists (ARPE) recently videotaped one of their continuing education sessions entitled "Pesticide Safety and Hazard: Fact and Fantasy." A copy is available for rent from the National ARPE Office

**CONTACT: DR. RICHARD CARR (MD)**

**(301) 731-4541**



## FSCBG II WORKSHOP COMPLETED AT CLEMSON UNIVERSITY

The third Forest Service Cramer-Barry-Grimm (FSCBG) aerial spray model workshop was held at the Data General Training Center, Clemson University, January 8-12. This was the first FSCBG workshop conducted using the Data General. Previous instruction has been on personal computers. Continuum Dynamics, Inc. and WO/FPM cooperated in presenting the workshop to participants from USDA-FS, EPA, APHIS, DuPont, North Carolina, and New Zealand. The workshop focused on using the model and selecting inputs to solve a hypothetical gypsy moth problem. The following students participated in this FSCBG II training:

Curtis O'Neil	Forest Service, FPM, Lakewood, CO
Jose Negron	Forest Service, FPM, Pineville, LA
Amy Creighton	Forest Service, FPM, Morgantown, WV
John Nobles	Forest Service, FPM, Morgantown, WV
John Anhold	Forest Service, FPM, Durham, NH
Michelle Frank	Forest Service, FPM, Durham, NH
Jeff Scarbrough	Environmental Protection Agency, Athens, GA
Sandy Bird	Environmental Protection Agency, Athens, GA
Brian Richardson	Forest Research Institute, New Zealand
Jeff Falini	E. I. DuPont Co., Newark, DE
Ron McClendon	USDA APHIS, Hyattsville, MD
Charles Brown	USDA APHIS, Hyattsville, MD
Tony Chiotakis	North Carolina Dept. of Agriculture, Raleigh

The next FSCBG workshop will be held at Clemson University February 5-9, 1990. For additional information.

**CONTACT: JACK BARRY (CA)**

**(916) 758-4600**

### GPS and FPM

The USDA Forest Service, Missoula Technology and Development Center (MTDC), has a project to introduce and implement Global Positioning System (GPS) technology into the agency. GPS is a satellite-based radio navigation and positioning system operated by the Department of Defense. It promises to be a good tool for tasks requiring site location and relocation. It can be used with currently available equipment. FPM may find use for GPS in the following ways:

1. Determining the boundaries/areas of an infestation and plotting these to scale on an overlay;
2. Insect trap location and relocation;
3. Sample tree location and relocation;
4. Recording and plotting aircraft swath/flight path; and
5. Other tasks requiring positioning/relocation.

To help achieve implementation of GPS technology, MTDC in cooperation with the University of Montana has established a seminar entitled "Satellite Navigation in Resource Management". The seminar will take place over 3 days and cost \$350./person. Each day will consist of approximately 4 hours of classroom instructions and 4 hours of hands-on GPS equipment operations in the field. Students will learn the fundamentals of GPS and use the equipment on a variety of field tasks such as point location, navigation to a point (relocation), traversing, digitizing a boundary, plotting, etc. Tentative dates for the seminars are June 19-21, Sept. 11-13, Sept. 25-27, and Oct. 2-4, 1990. For more information,

**CONTACT: TONY JASUMBACK (MT)**

**(406) 329-3922.**







### TECH TRANSFER

According to Lisa Kuuttila, President, Technology Alignments, Inc.. Companies in the U.S. often fail to use their own technology. For example, although the U.S. spends more than twice as much as any other country in the world on research and development, it has not received the full benefit of that technology, thus losing opportunities for increased competitiveness in the global marketplace. There are several indications that the U.S. does not benefit from the use of all of the technology developed. An example would be the relatively unsuccessful attempts by the USDA Forest Service to move the further development, registration, production, and processing of nucleopolyhedrosis viruses to the private sector. Recent efforts with Espro, Inc., show promise but additional work is yet to be done. Other indications of lack of U.S. use of technology transfer include:

1. The U.S. received only 845 patents worldwide in 1987 per billion dollars of research. Compare this to Japan who received over 14,000 patents worldwide per billion dollars of research. West Germany, the United Kingdom, and France were all also higher than the U.S. As a result, much of the technology developed in the U.S. is unprotected or, at the very least, underprotected. The incentive to develop unpatented technology is small unless a company has some other type of significant advantage.
2. U.S. companies and academic organizations rarely use technology developed outside of their own company. A recent study by Japan's Ministry of International Trade and Industry shows that, on the average, Japanese companies receive 47% of their technology from outside their own company. U.S. use of technology developed outside their own company is so small as to be barely noticeable. Many different organizations suffer from the not invented here (NIH) attitude that prevents them from taking advantage of the opportunities available by partnerships with others.
3. Time and cost for U.S. companies to commercialize an externally developed idea is high. Time and cost for a U.S. and Japanese company to commercialize an internally-developed idea is roughly the same. However, the average Japanese company commercializes an outside idea in 25% less time and at 50% less cost than its U.S. counterpart.

For additional information on technology transfer

**CONTACT: BOB BREAZEAL (WO)**

**(202) 447-3331**

### NUMBERS OF PESTICIDES DWINDLING

According to data compiled (November, 1989) by the U.S. EPA, the numbers of pesticide products, active ingredients, and registering companies have been in decline in recent years. In addition, the reregistration requirements of the 1988 amendments to FIFRA are likely to have a dramatic effect. For example,:

<u>Year</u>	<u>Approximate No. Pesticide Products</u>	<u>Approximate No. Active Ingredients</u>	<u>Approximate No. Registering Cos.</u>
1978	55,000	1,800	5,000
1983	48,000	1,600	4,000
1988	45,000	1,400	3,400
1989	25,000	1,300	2,400





## ANTS, ELECTRICITY, AND INSECT CONTROL

According to Rick Weiss, report for **Science News**, and the **USDA Quarterly Report**, fire ants may now be on the hot seat.

Ants Get a Transforming Charge: Red fire ants, infamous for their nasty bites, have gained added notoriety for their habit of invading outdoor electrical equipment such as traffic signal control boxes, household electric meters, and airport runway lights. The insects especially enjoy gathering around tiny electrical switches called relays, where they congregate by the hundreds, disrupting the flow of current and permanently damaging surrounding circuitry.

While the electricity itself rarely kills the ants, their affinity for these devices apparently overwhelms their usual drive to eat and drink, leaving masses of the insects dead of thirst and/or starvation. But an incomplete understanding of exactly what the ants really like about these highly charged environs has left engineers and entomologists uncertain how to deal with them.

Experiments at Texas A&M University now confirm that electrical fields are the draw. The researchers ruled out other candidate attractants, including magnetic fields, vibration, and the ozone generated by such devices. Scientists still don't know why ants find electrical fields so attractive. But since electrical relays by definition generate these fields, the simplest anti-ant strategy amounts to sealing the affected components in plastic boxes and applying insecticides to the surrounding wires.

Who Says Ants Are Airheads? Suppose you had a large head and you learned that a lunatic was decapitating big-headed people who walked to work during the day. Would you start working the night shift? That seems the approach taken by some Atta cephalotes, tropical ants subject to decapitation by parasitic flies of the genus Neodohrniphora. After mating, female flies sneak up on ants foraging for leaf litter and inject a tiny egg into the skull of each ant. As the fly develops, its larva consumes the ant's head from the inside out. Research by D. Feener, Jr., of the University of California, Los Angeles, and his colleagues indicate that these flies--which only fly by day--require ant heads at least 1.6 millimeters in diameter. And the scientists report another intriguing observation: Call it evolutionary necessity rather than intelligence if you choose, but a disproportionate number of the A. cephalotes whose heads exceed 1.6 mm put off their foraging until after dark.

More on Ant Research. Two USDA studies by scientists on controlling fire ants without harming other insects were published in the latest issue of the agency's **Quarterly Report**. Richard S. Patterson of USDA's Insects Affecting Man and Animals Research Lab in Gainesville, Fla. showed that an Argentinian protozoan, Thelphania solenopsdae, could control fire ant populations. The protozoan thrives only within the fire ant, infecting the fat of workers' and the ovaries of queens. Further study is yet to be done on how the disease affects total colonies.

David Williams, also of the Gainesville Lab, has shown that housefly pupae soaked in toxins are attractive to prowling fire ants which carry them back to the colony as food. The study indicated that the toxin-laced pupae are as effective as the present control method of feeding fire ants corn grits mixed with hydramethylnon and fenoxycarb. Using fly pupae; however, is more expensive. For more information

**CONTACT: DR. R. PATTERSON**

**(904) 374-5900**





## COMPARISON OF PROPOSED PESTICIDE BILLS

Today marks the opening of the 2nd Session of the 101st Congress. Among the items on the legislative agenda are proposed changes to several pesticide-related bills. The law firm of McLeod & Peries developed and published a summary in their "**Agricultural Law Letter**." It covers proposed legislation that would affect the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, and the Federal Food, Drug, and Cosmetic Act (FFDCA). The bills include the de la Garza-Madigan amendment (H.R.3292), the Waxman-Kennedy bill (H.R.1725, S. 722), the Bush Proposal, and the Brown bill (H.R. 3153). The following summary characterizes the pending legislation:

**Cancellation:** The de la Garza-Madigan bill would change the cancellation procedures to informal rulemaking, with limited public hearing rights. The Bush proposal is similar to the de la Garza bill. The Brown bill would change both (1) cancellation procedures (to informal rulemaking), and (2) standard for cancellation would be "reasonable probability" of unreasonable risk). The Waxman-Kennedy bill does not propose changes to cancellation procedures.

**Suspension:** The Bush proposal would change the standard for suspension to "substantial risk" or, alternatively, when a significant risk is "unreasonable" in light of "reasonably available facts and circumstances." The Brown bill would change both (1) suspension procedures (no hearing, no rulemaking, and a 180-day sunset, and (2) standard for suspension and emergency suspension (to "generally causes unreasonable adverse effects" and "is likely to result in a significant risk"). The other two bills do not propose changes to suspension rules.

**Sunset of Registrations:** The Bush proposal is similar to the Brown bill that would establish various expiration dates (9-19 years) for registrations, which would trigger reapplication.

**Enforcement:** The Bush Administration proposal is the only one that speaks to enforcement. It would substantially increase civil and criminal penalties, recordkeeping, and inspection authority.

**Agency Coordination:** The de la Garza-Madigan bill would require EPA, USDA, and HHS to consult during the cancellation process. The Bush proposal is similar to the de la Garza bill. The Waxman-Kennedy bill does not cover agency coordination. The Brown bill would require EPA and USDA to cooperate on identifying research needs, IPM, and benefits assessment.

**Food Tolerances:** The de la Garza-Madigan bill allows a "negligible risk" standard for food residue tolerances to be set by rulemaking for all risks. Benefits would be considered. The Waxman-Kennedy bill would set detailed negligible risk standards in statute for all risks (e.g.,  $10^{-6}$ ). No benefits may justify a tolerance over negligible risk. The Bush proposal would set flexible negligible risk standards for carcinogens only. Benefits would be considered. The Brown bill does not address this subject.

**Uniform Tolerances:** The de la Garza-Madigan bill would require uniform national tolerances on reregistered pesticides, except upon waivers granted by EPA for special circumstances. The Bush proposal is similar.

In addition to the 101st Congress discussing these proposals, other legislative proposals are likely. For additional information





### NPIRS CONFERENCE SCHEDULED

According to Purdue University, caretaker of the National Pesticide Information Retrieval System (NPIRS), this year's NPIRS User's Conference promises to be outstanding. The February 20-22, 1990 conference will be held at the Holiday Inn International Drive Resort Hotel, Orlando, Florida.

This year's conference features three outstanding keynote speakers, leaders in their field, covering topics ranging from FIFRA, Proposition 65, and Food Safety legislation to Minor Use Reregistration and Endangered Species. Congressman Pat Roberts is a national leader in pesticide legislation, California Undersecretary of State Tom Warriner administers one of the toughest State pesticide programs in the country, and USDA/CSRS Jim Parochetti is an expert in minor-use pesticide and toxicology issues. NPIRS project manager, Dick Collier, will be speaking throughout the conference on issues of importance to NPIRS users, new commands, using NPIRS, and the future directions of NPIRS. The national media has been invited to participate in the conference, covering the keynote addresses and conference workshops which, along with the national standing of the speakers, will add to the significance of this year's conference. To reserve a room, call the hotel directly and mention the "National Pesticide meeting."

CONTACT: HOLIDAY INN (FL)	(407) 351-3500
ED RAMSEY (NPIRS)	(317) 494-0442

### CALL FOR PAPERS

Papers are invited for presentation at the "Science Session" of the 1990 Symposium and Trade Show on "Aircraft in Agriculture and Forestry, Industries Future Needs." The symposium is to be held at the Holiday Inn, Winnipeg, Manitoba, October 8-12, 1990. The emphasis of the symposium will be on the practical application of new developments in the field. Speakers at the "Science Session" are requested to concentrate on:

- o Describing new technology to an audience of prospective users;
- o Predicting future ideas, innovations, and applications;
- o Explaining for the benefit of the user/operator, the principles of operation of current and/or new technology.

The objective of the "Science Session" is to maximize the interaction between the user/operator and the developers of new technology and science. It provides an opportunity to promote new technology. This is not intended to be a session of scientific papers; however, papers will be published in the Symposium Proceedings. Presentations will be 20 minutes each, including discussion. If interested

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